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PRECIPITATORS OF JOB-RELATED STRESS AMONG HIGH SCHOOL TEACHERS

BY

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A THESIS

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The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled Precipitators of Job-Related Stress Among High School Teachers submitted by Olga Lillian Crocker in partial fulfilment of the requirements of the degree of Master of Business Administration.

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ABSTRACT

This exploratory study addressed itself to the problem of identifying, among teachers in a large senior high school, precipitators of job-related stress. Three batteries of variables, the demographic characteristics of the teacher, his personality attributes, and the organizational structure within which that teacher works, were examined.

Job-related stress can be classified in five main categories: that precipitated by work overload, by role ambiguity, by role conflict, by career aspirations, and because of lack of personal influence.

Demographic variables, a high task and self orientation, and a lack of Machiavellianism, together with a dissatisfaction with delay in decision making, are the main characteristics of the teacher who experiences job-related stress attributable to work overload.

Women, between the age of thirty-one and forty years, who are highly authoritarian, task oriented, and self-critical, experience the highest role ambiguity stress scores. They are also highly dissatisfied with every aspect of structure.

A specific combination of personality attributes, namely high authoritarianism, self-defensiveness, introversion, and low need achievement, contribute to a high score on job-related stress attributable to role conflict.

Curricular associates, particularly those who are not task oriented, but are extraverts, have the highest scores on stress which is attributable to the level and type of their career aspirations.

High need achievement, introversion, and structure are the most important precipitators of stress resulting from a lack of personal influence.

Very little additional explanation was gained by partialing out the effects of personality from the effects of structure. From these partialing results, the conclusion could be drawn that structure itself, rather than perception of structure, is a precipitator of stress.

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I. THE PROBLEM

A. INTRODUCTION

JOB-RELATED STRESS--a vague, ambiguous concept with divergent meanings and connotations, however, once this feeling has been experienced, these words are universally understood.

Stress causes emotional disturbances that cost industry hundreds of millions of dollars annually (Rogers, 1973, p. 21); results in problems involving alcoholism:

> . . . six to nine percent of the adult working force are alcoholics. This implies that a sizable section of the working force will be having difficulty in making decisions. They will operate inefficiently, have three to five times as many accidents as other employees, be absent considerably longer and more frequently than the average employee, and probably have a shortened life expectancy (Barron, 1973, p. 8);

in lost potential: Chronic anxiety (stress)

> . . . does not shorten your life. But people who have high intelligence quotients--and most anxiety victims do--don't live up to their potential. Their ability to produce is killed. (Raskin, 1973, p. 225);

and in physiological dysfunctions, disease, mental disorder, and pathological behaviour:

> . . . Physiological reactions to stress may express themselves in cardio-vascular disorder; in respiratory ailments such as certain forms of asthma and attacks of hyperventilation; in gastro-intestinal disturbances leading to belching, flatulence, anorexia, obesity, constipation, or diarrhea, in migraine and tension headaches; in pelvic pain, dysmenorrhea, dyspareunia, or impotence or frigidity. Psychosomaticists also study and treat stress-induced responses contributing to modifications of the diabetic metabolism, the neurodermatoses, and gastric and duodenal ulcers (Rogers, 1973, p. 21).

But industry takes no account of psychological job descriptions:

> . . . That is, descriptions of the aspects of the job which, besides simple duties, make demands on the person--the fact, for example, that a waitress is caught between the customer's demands and the kitchen's inflexibility. (Haire, 1959, p. 91).

Indeed, job stress is often a conscious organizational strategy used by supervisors and managers to insure a successful function of the organization and an important function of most management policies is to develop

> . . . competent executives who among other things: (1) are able to 'needle', 'drive', 'sell', 'push', 'pressure', persuade', 'urge', 'coerce', 'win' employees to increase productivity, loyalty, and interest for the organization and for their job (Argyris, 1957, p. 125).

If these aspects are achieved, job stress may be functional for organizations (Torre, 1966, pp. 7 - 12).

Why then should organizational theory and behaviour analysts be concerned with the study of stress? Ultimately, these persons must study job-related stress to attempt to decrease the dysfunctional aspects to the individual while at the same time increasing this functionality to the organization which that individual serves.

1. Defining Job-Related Stress

What is stress? To Gross (1970), it is "the failure of routine methods of managing threats"; to Mechanic (1968), it is

> . . . a discrepancy between the demands impinging on a person--whether challenges or goals--and the individual's response to these demands. (p. 7)

Whether stress occurs under a particular situation depends upon four factors, namely the ability and capacity of a person, the skills and limitations imposed by group practices and traditions, the means available within the social environment, and the norms that define where and how an individual may utilize these means.

Another definitional model,[1] that of Lazarus and Baker (1956, p. 22), shows an individual under stress perceiving a situation that obstructs or threatens to obstruct a goal that the individual is motivated to achieve. Affect (intervening variable) increases and behaviour occurs in an effort to cope with the affect. This same type of idea was first perceived by Coch and French (1948), Lewin (1938) and Baldamus (1951) who saw conflicting forces, blockages, and incompatible demands creating stress by forcing a search for a new equilibrium level. More recently, Buck (1972) felt that the greater the extent to which an individual cannot control the frequency and nature of the induced demands, the greater will be the job pressure he experiences. Buck found that workers and managers referred to the pressure created by their jobs by various synonyms and that various writers referred to the same phenomena by a different name:

> . . . anxiety (Basowitz, Korchin, and Grinker, 1958), frustration (Lawson, 1965; Rosenzweig, 1944), strain (Trist and Bamforth, 1951); Goode, 1960; Mitchell, 1958; Baldamus, 1951), stress (Lazarus, Deese, and Osler, 1952; Horvath, 1959; Vogel, Baker, and Lazarus, 1958; Janis, 1958; Dohrenwend, 1961), press (Murray, 1938), pressure (McGregor, 1967; French and Kahn, 1962; Gross, Mason, and McEachern, 1958), conflict (Berlyne, 1960; Miller, 1944; Boulding, 1962; Gross, Mason, and McEachern, 1958; Stouffer and Toby, 1951), and tension (Lewin, 1951).

This study, following that conceptualized by Buck, defines job-related stress as:

---

1. A number of models exist to explain stress. These can be grouped into four main types: the more general definitional ones which are discussed here, biochemical models, psychosomatic models, physiological models, and combinations of these. Among the psychosomatic are: Alexander (1950), Dunbar (1947), Grinker and Spiegel (1945), Wolff (1950), Wolff (1953); the biochemical: Selye (1956), Dohrenwend (1961); and the physiological ones: Stevenson and Duncan (1950), Wolf (1950), Wolff (1948), Margolin (1950), Grace (1950), Lindemann (1950), Kepecs and Robin (1950), Ripley (1950).

> . . . the resultant psychological state of the individual which exists when he perceives that (1) conflicting forces and incompatible demands (are) being made upon him in connection with his work; (2) at least one of the forces or demands is an induced one . . . (p. 49)

and that the effect of the forces on the individual is one of three: recurrent, stable but persistent over time, or of a crisis, with long-term effects, nature.

2. Need for the Study

Generally, research studies in stress have concentrated on four aspects: the manifestations of stress, the effects of specific personality traits, the effects and differences of stress on particular job positions, such as those on the foreman, senior and middle management executive positions, etc., the stress and reaction created by crisis situations. The observation of Levine and Scotch (1970, p. 7) that very little research has been conducted linking stress to disorder is even more true of precipitators of stress. As pointed out by these authors, few people have a mastery of the various disciplines required to do this type of study--a knowledge of stress, of psychological variables, of statistics, of computers. As a result, few studies have attempted to identify the underlying precipitators. Fewer have concerned themselves with the teaching profession.

Following a 'hold the line' policy on educational costs and financing by the Government, the official voices of teachers in Edmonton, the Edmonton Public and Separate School Locals of the Alberta Teachers' Association have been concerned with the increase in class load, with the elimination of preparation and support time, and the decrease in teaching staff per institution. Time comparisons on stress, are to date, impossible

but it is possible that job-related stress has been increased within the Alberta teaching profession because of the changes in working conditions.

3. Definition of the Problem

It is the purpose of this study therefore to determine precipitators of stress among teachers. The problems investigated are:

1. What is the distribution of scores on the items of a known job-related tension index for these teachers, how are they interrelated, and what factors might exist;

2. What characteristics of the individual and of the organizational structure, or combinations of these, contribute to high stress levels?

It is expected that personality variables, rather than organizational practices (structural variables) will contribute most to the explanation of variation in stress; and that the magnitude and type of stress experienced will be a function of a number of demographic variables: age, sex, marital status, educational level, involvement in the Alberta Teachers' Association, position, position desired, discrepancy between present position and position desired, years of experience, subject taught, and concern in teaching.

B. METHODS OF INVESTIGATION

To determine precipitators of stress, it was necessary to (a) select a sample, (b) select testing instruments, (c) administer the instruments chosen, (d) select the statistical techniques that would be most useful in analyzing the data obtained. The remaining part of this chapter deals with these four aspects of the problem and is organized in that manner.

1. Selection of the Sample

Time, costs, and the complexity of the machinery that would need to be set into motion limited this exploratory study to that of one school, Victoria Composite High. VCHS was chosen for a number of reasons: Firstly, there is no reason to assume that the staff and organization at this school is atypical of the profession. It is located in the 'inner' city, but in that it is both a composite[2] and further (continuing, adult) school, it draws students from the entire city of Edmonton. In that it is located within a business, and out of the professional residency areas, it probably is the subject of less parental but more business, industry, and community criticism and advice. The close proximity to the offices of the Edmonton Public School Board has both advantages and disadvantages--the school's needs are recognized early; conversely, the inadequacies also do not escape attention. It seemed therefore that VCHS

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2. Victoria Composite High School (VCHS) is the second largest high school in Edmonton. Its student population varies between twenty-two and twenty-eight hundred. This secondary high school has grades ten to twelve, and as the word composite in its name implies, has students who are taking academic courses in preparation for further education at a University or at a technical school and also students who are being prepared to go directly into the business and industrial world--in business occupations, in the fine and applied arts, as technician's assistants and into specific apprenticeship trades. Appendix K illustrates the existing structure of the Edmonton Public School Board and Victoria Composite High.

was a reasonable choice--stress levels created by factors exogenous to the school would be, if not minimal, at least not excessive.

Secondly, the author was known at the school and could expect co-operation from teachers and administrators.

Thirdly, VCHS and the Edmonton Public School Board, through their research and development and psychology departments, were prepared to offer technical support by way of duplicating, computer, and personnel services. These were important considerations.

It is possible that the VCHS organization is unique and that suggestions formulated through this study are inapplicable to teaching in general. In that this is an exploratory study, it is not within the intention of this study to draw conclusions for the entire profession.

2. Selection of the Instruments

The second task involved selection of the instruments to be administered. Since the original idea behind this research study was to determine whether the tests used in the Kahn et al (1964) study were equally applicable in determining job-related stress for teachers, the job-related tension index used in that study was chosen. However, many of the personality tests used by the Kahn group, particularly the Minnesota Multiphasic Personality Inventory, the Cattell IPAT Anxiety Test, the California Personality Inventory, and the 16 Personality Factor Questionnaire, require special training or special permission. To avoid the delay that either of these two actions might invite, it was decided to use more readily available and usable psychological tests. The one limitation that was set was that previous research must have shown these tests to have high reliability and validity on personality attributes Kahn et al

and others had identified as significant to the study of stress, i.e. neurotic anxiety, extraversion - introversion, flexibility - rigidity, achievement and security orientation and a fifth attribute--machiavellianism--which a more recent study by Gemmill and Heisler (1972) had identified as a significant variable in high stress.

The instruments therefore selected for this study include:

(1) The job-related tension index used by the Kahn group in their national survey (See Appendix B, Sheet I, page 4, nos. 21 - 35);

(2) Eysenck's Personality Inventory which provides scales of neuroticism, extraversion - introversion, together with a lie score (Appendix B, Sheet II, pages 1 - 3). However, two personality variables tested by that inventory are treated in this study in a manner different from the customary procedure, specifically:

(a) It was the intention that data for teachers who scored very high on neuroticism (population mean on which test was standardized plus 1.65 standard deviations from the mean ($p < 0.05$, one-tailed), i.e. $10.9 + 1.65 \times 4.7$ or in excess of 19), would be disregarded on the assumption that the personal problems of these teachers are so severe that they cannot analyze their own feelings and reactions to the organizational setting objectively. This however proved unnecessary because the highest score (16) is much lower than the limit set;

(b) In keeping with the Wilde (1966) findings, the lie score was treated as a personality dimension measuring the extent of self-criticalness or self-defensiveness. Data for teachers with high lie scores, therefore, are not disregarded.

(3) The California F (short) which provides a measure of flexibility - rigidity (authoritarianism; Appendix B, Sheet I, page 5, nos. 36 to 42);

(4) Sherwood's three-item test (Appendix B, Section I, page 5, nos. 43 to 45) to give an index of need achievement.

An adequate achievement and security orientation index was difficult to locate. A number of the tests examined, particularly the McClelland one, had high reliability and validity but because scores depend on the analysis of the interpretations of what is revealed in particular pictures, the test appeared difficult to analyze. Others, such as the Edwards Personality Inventory, while valid and reliable in their entirety, had not been broken into their separate components and used separately sufficiently to establish co-efficients of reliability or validity. (A more adequate test may have been located subsequently; this is given in Appendix D).

In view, however, of the brevity and the lack of extensive research with the Sherwood test, the Bass Orientation Inventory was also included (Appendix B, Section I, pages 6 - 12) in an attempt to analyze in which of three directions--self, task, or service--an individual's need achievement might be directed.

(5) Christie's Mach V was used to obtain an index of machiavellianism. Because of the forced nature of this scale, its opposite--sociability--was also obtained (Appendix B, Sheet II, pages 3 to 8);

(6) Those nine scales, of the nineteen different ones in the House Organization Description Questionnaire, felt to be particularly applicable to teaching, namely: adherence to chain of command, administrative

receptiveness of ideas, information distortion and suppression, provision for horizontal coordination, upward information requirements, decision delay, planning adequacy, structural rigidity, and promotional opportunities, were included. (See Appendix B, Sheet III, pages 2 - 6). This selection does not violate the intention of the authors. Publications dealing with this particular scale treat each topic separately. Indeed, House and Rizzo (1972) remark:

> It is recognized that for any particular organization all of these variables may not be appropriate criteria of effectiveness. The choice of criteria will depend on the objectives of the organization and the requirements imposed on it by its environment (p. 396).

The House scales were chosen for two reasons: firstly, in obtaining a difference between existing and ideal conditions, an attempt had been made to measure dissatisfaction rather than likes and dislikes about a particular organizational structure. Secondly, these particular scales had been validated with success against the job-related tension index used in this study.

(7) A set of nine questions, developed by the author, dealing with specific conditions within teaching (Appendix B, Section III, pages 6 and 7) were included to test dissatisfaction with teaching in general.

(8) Because research had shown that demography is a precipitator of stress, eighteen demographic questions (Appendix B, Sheet I, pages 1 to 3 and Sheet III, page 1) were also included.

The scales were not identified by name. At least one, the Mach V, is so value laden that ". . . the very mention of the term sets off a varied range of associations, most of which are not congruent with research results." (Christie and Geis, 1970, p. 36).

3. Administration of the Instruments Chosen

The above sixteen instruments, totalling one hundred ninety items were divided into three sections:

Section I: Demographic, job-related tension index, California-F, need achievement, and orientation inventory;

Section II: Mach V and Eysenck Personality Inventory;

Section III: Organizational Description Questionnaire (adaptation of) and author-prepared organizational description questionnaire.

A pre-test with five teachers for the purpose of obtaining an estimate of time suggested a range of: Section I--17 to 28 minutes; Section II-19 to 31 minutes; Section III--12 to 24 minutes, or a total of 48 to 83 minutes. Although it was assumed that the length of the questionnaire would not create a problem, it, in fact, did; as did getting all three sections returned from each person and identified correctly. Seventy-seven Section I questionnaires, sixty-four Section II, and sixty-three Section III questionnaires were returned; sixty-one of these could be identified as complete sets.

The three sections were administered to the entire teaching staff (those persons who require a teaching certificate for performance of their particular job), i.e. 108 teachers and administrators at Victoria Composite High School, Edmonton, Alberta, during a three-week period beginning early in December, 1973.

4. Selection of Statistical Techniques

Certain comparisons and statistical techniques were employed in an effort to identify the precipitators of stress of VCHS teachers. To assist the reader in comprehending the massive quantity of information that is utilized within this study and these statistical techniques,

three diagrams follow: Figure 1 shows the model and itemizes the content of the batteries of variables used; Figure 2, the statistical treatment used; and Figure 3 is a flow chart of the processes involved.

By way of comparisons, validation of the respondents as representative, on demographic variables, of the total Victoria Composite High School teaching population was made. Secondly, the χ^2 technique was employed to compare the distribution obtained on each of the fifteen stress items with those of the Banff School of Management sample (Rogers and Jobson, 1974); and to the extent possible, to the Kahn et al study.

Among the statistical techniques employed were the following:

(1) Factor analysis, using the principal components procedure, was used in an attempt to group the fifteen items into some manageable number and to identify those groupings of items which teachers might have felt were similar;

(2) To test for differences among means among the various groups on each of the demographic variables, analysis of variance was employed;

(3) Discriminant analysis was employed to relate demographics to stress, thereby determining linear combinations of stress items or factors which best distinguish among individuals with respect to each of these discrete demographic variables;

(4) Futhermore, the relationship between stress and each of the ten personality variables and the ten structural variables was measured using eight correlation matrices, as follows:

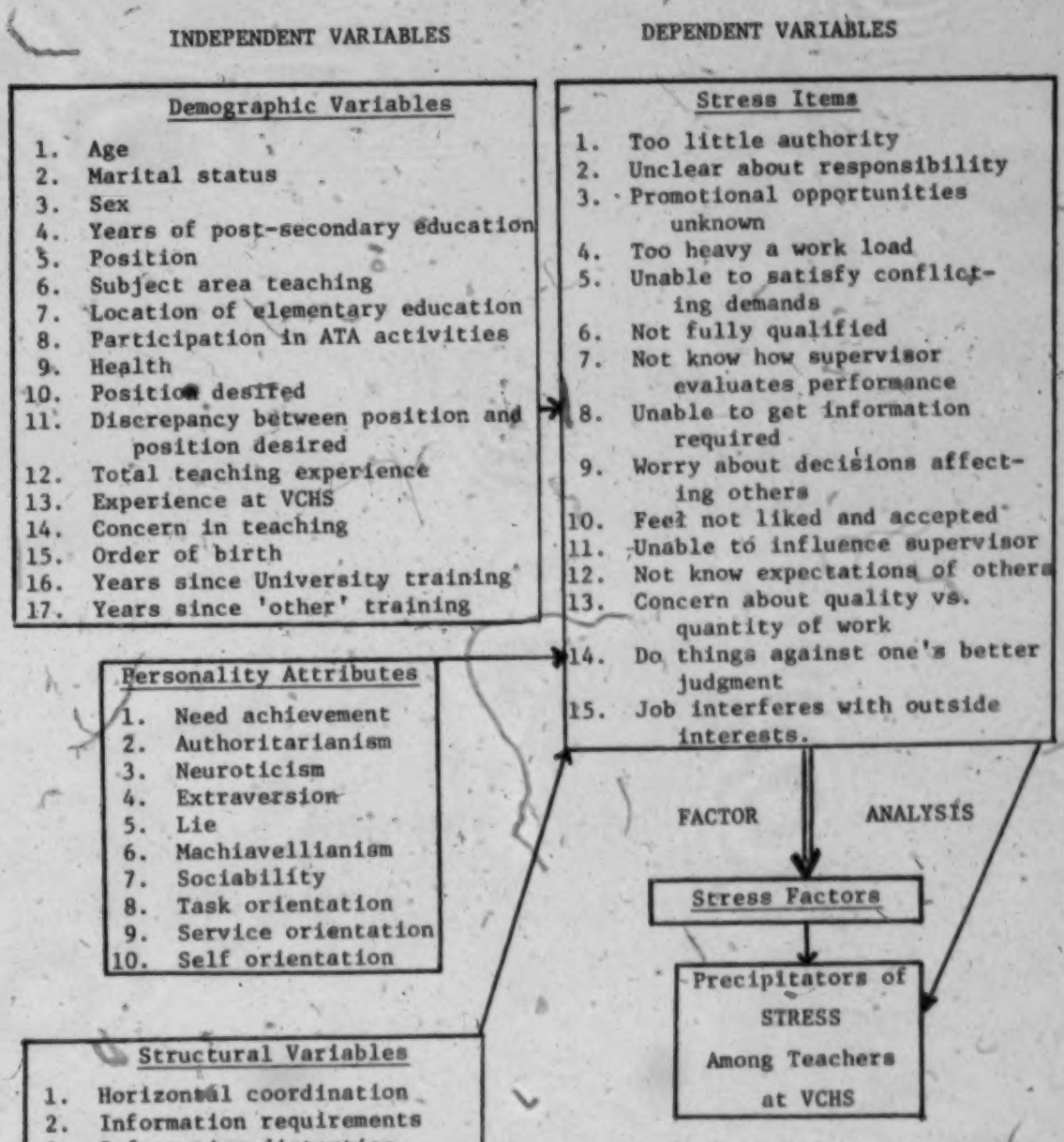

Figure 1

Model and Content of Batteries of Variables Used

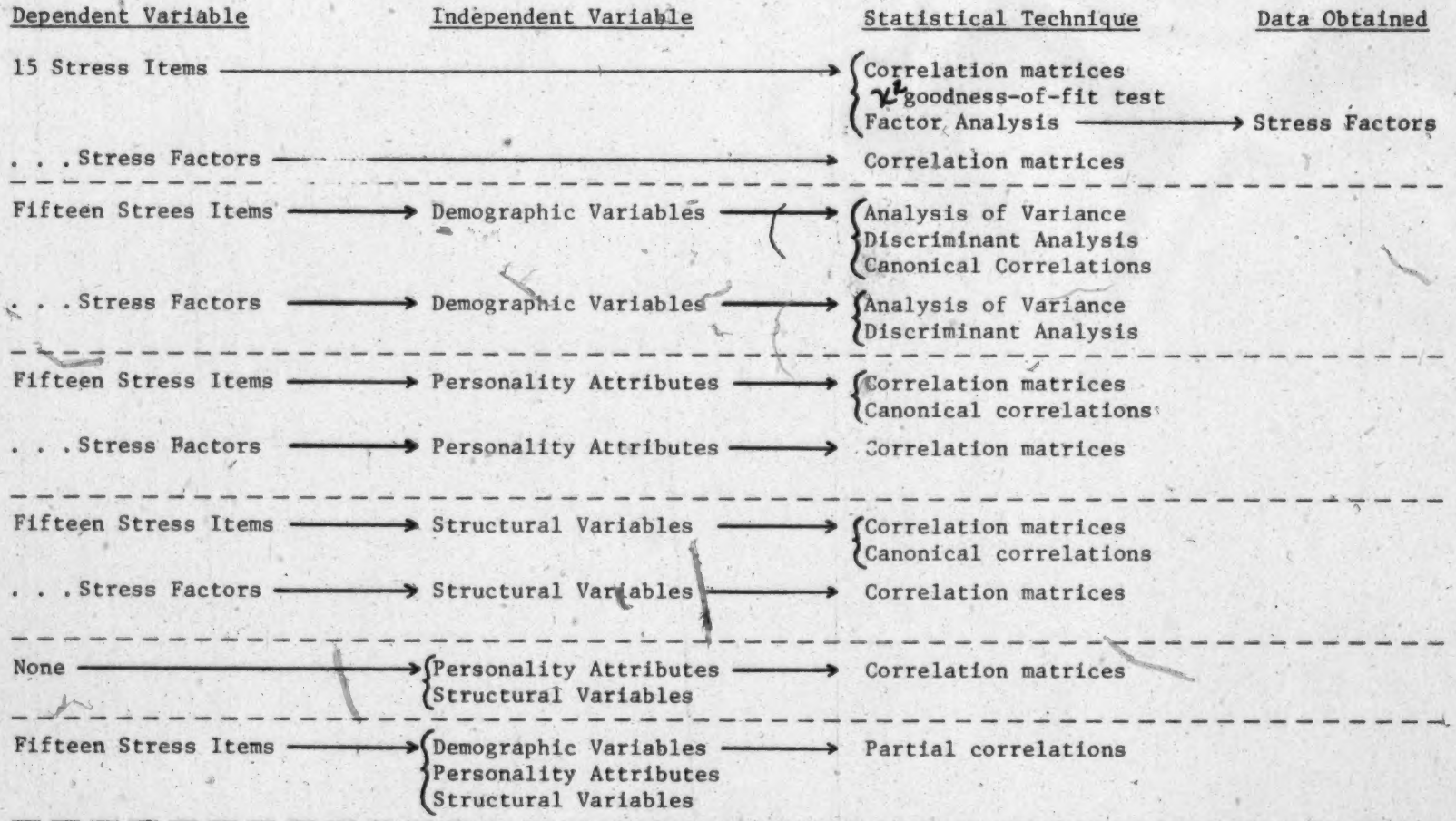

Figure 2
Statistical Analyses Used

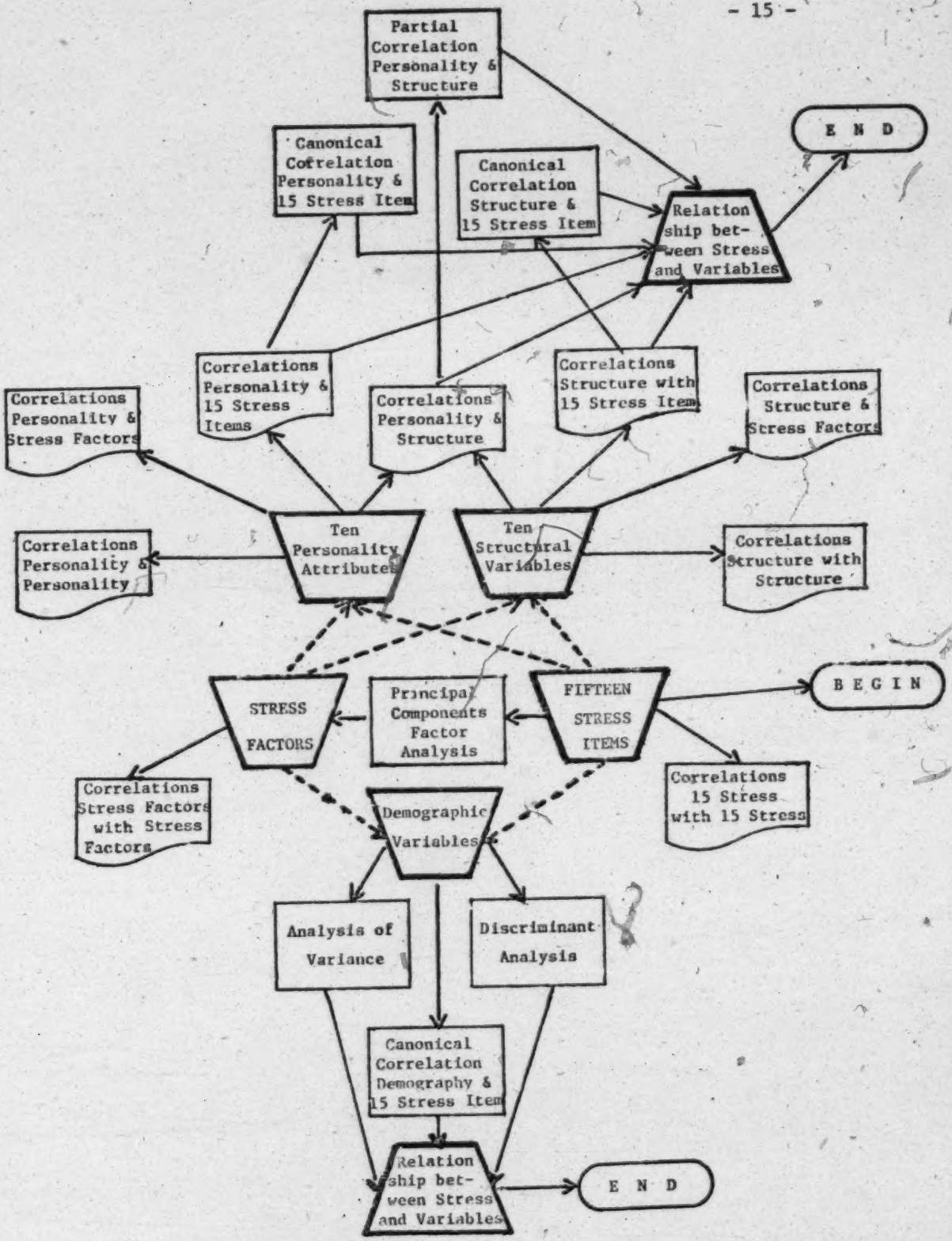
Partial Correlation Personality & Structure
Canonical Correlation Personality & 15 Stress Item
Canonical Correlation Structure & 15 Stress Item
Relation ship between Stress and Variables
E N D
Correlations Personality & 15 Stress Items
Correlations Personality & Structure
Correlations Structure with 15 Stress Item
Correlations Personality & Stress Factors
Correlations Structure & Stress Factors
Ten Personality Attributes
Ten Structural Variables
Correlations Personality & Personality
Correlations Structure with Structure
STRESS FACTORS
Principal Components Factor Analysis
FIFTEEN STRESS ITEMS
B E G I N
Correlations Stress Factors with Stress Factors
Demographic Variables
Correlations 15 Stress with 15 Stress
Analysis of Variance
Discriminant Analysis
Canonical Correlation Demography & 15 Stress Item
Relation ship between Stress and Variables
E N D

Figure 3

Schematic of Statistical Analysis Used

(a) a matrix among the fifteen stress items; (b) another among the ten personality variables; (c) a third among the ten structural variables; (d) between the fifteen stress items and the personality attributes; (e) between the fifteen stress items and the structural items; (f) between the five stress factors and firstly, the personality attributes, and then the structural variables; and finally (g) between the personality and structural variables;

(5) In addition, canonical correlations relating the battery of fifteen job-related tension items to the battery of personality attributes, to the battery of organizational practices (structural variables), and to the battery of demographic variables were extracted;

(6) To determine the effect that personality had on dissatisfaction with each of the structural variables, partial correlations were calculated between the fifteen stress items and these ten structural variables, controlling, in each case, for the ten personality attributes and for those demographic variables that could be classified as being continuous.

The entire statistical analysis, however, is based on three assumptions:

(a) That the data is a random sample from a large population of teachers;

(b) That stress is a multifarious dimension;

(c) That stress is the dependent variable and that each of the demographic and structural variables and the personality attributes can cause stress. The techniques used--predominantly correlation matrices--signify only that a relationship exists. They do not indicate cause-effect or a precipitative direction. Nor is there any control for spurious relation-

ships. In other words, the assumption is made that if the components of demography, personality, or structure can precipitate stress, the items within the batteries of the variables will be strongly correlated with stress. If however these variables and stress are not correlated, then they are not precipitators of stress.[3]

Analysis of the data, which follows in Chapter III, therefore, must be read with these assumptions in mind.

3. See Vernon E. Buck (1972) for a further justification of this interpretation, pp. 87 - 91.

II. SURVEY OF THE LITERATURE

The survey of the literature reveals that the problems that a researcher on organization stress faces are numerous. These encompass not only the theoretical vs. empirical, and the laboratory vs. field approaches, but

(1) A lack of clarity as to the definition of organization stress and, indeed, of stress itself;

(2) The multitude of synonyms, previously explained, that are used interchangeably for the term 'job-related stress';

(3) The lack of a generally accepted model defining the variables that precipitate high stress;

(4) Lack of agreement as to specific delimiting definitions, of those variables that have been identified, such as role conflict, role ambiguity, etc.;

(5) A lack of reliable instruments for the measurement of organizational structures and the above variables. There is also the difficulty of separating the status quo from the respondents' perceptual view; and

(6) The contradictory nature of research findings.

This survey of the literature firstly sought a functional definition of organization stress based on a 'role' concept. Secondly, it looked at studies on machiavellianism and the four personality attributes identified by Kahn et al (1964) as contributing to organizational stress. Thirdly, studies specifically concerned with structure and stress were examined to determine if a particular facet of the organi-

zational edifice was instrumental in causing high stress levels or particular types of stress.

A. THE CONCEPT OF ROLE

Is stress a product of the personality of an individual? Demography? The structure within which that individual finds himself? To answer these questions, and also because the job-related tension index used in this study is 'role' oriented, the historical development of role and stress concepts is worth examining.

To Parson and Shils (1951) a crucial problem was the integration of role theory and personality constructs. They saw certain characteristics causing difficulty for the individual in meeting his role expectations, namely: (1) If there existed a lack of certain abilities and attributes necessary for the successful enactment of the roles involved; (2) If a self-concept was contrary to the expectations of the role; and (3) If certain attitudes and needs were present within the individual that would interfere with the enactment of a particular role.

Seeman (1953), in a study of 503 teachers' expectations of their superintendents and principals, enlarged on the Parsons and Shils theory and hypothesized that role conflict was due to (1) a status dimension, i.e. the desire or lack of desire for personal success; (2) an authority dimension--the conflict between values of dependence and independence; (3) An institutional dimension--the conflict created by one's obligations of friendship or kinship and one's obligations to society at large; and (4) The means-end dimension, i.e. the conflict between emphasis on getting the practical job done as against emphasis on the process of achievement.

Merton (1957) introduced the concept of 'role set' to include the complement of role relationships in which a person becomes involved by virtue of occupying a particular social position and Levinson (1959) and Selznick (1957) identified three sets of normative behaviour which an individual faces within an organization: (1) a prescribed norm (Levinson), i.e. behaviour that is expected of an individual because of the position he occupies; (2) a perceived normative behaviour (Selznick) i.e. how this individual sees himself in this role; and (3) role behaviour (Levinson), the actions that the person, because of what he is, exhibits to others.

Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964) in a successive step, related role behaviour or lack of behaviour to stress. They argued that stress is a consequence of role conflict and role ambiguity and of four personality variables--neuroticism, extraversion-introversion, flexibility-rigidity, achievement and security orientations.

Furthermore, when there is uncertainty in the mind of the individual as to the performance of his duties, role ambiguity exists. This uncertainty can be in three areas: (1) unclearness about the scope of responsibilities, i.e. unclearness about what an employee is supposed to do; (2) how he is supposed to do it; and (3) what standards and expectations he is expected to meet (pp. 22-23).

When a difference exists among the various prescribed norms or between that which is prescribed and that which is perceived as normative behaviour, role conflict results. This is of five types:

Inter-sender role conflict results when pressure is exerted by different members who perceive the individual's role from different viewpoints;[4]

Inter-role conflict is the consequence of contradictory demands being made by the groups and associations of which the individual is a member;[5]

Intra-role is the product of conflicting demands made by one person;[6]

A fourth type, person-role conflict, results when action is required that violates the moral codes and standards that the individual prefers to live by; and finally

Role overload is a consequence of too many expectations--each of which is legitimate and compatible, but which together are impossible to complete within the given time restrictions (Kahn et al., 1964, pp. 19-20).

Cartwright and Zander (1968), Roethlisberger and Dickson (1939), Coch and French (1948), And Goode and Fowler (1949) indicate that the informal organizational structure can also create role conflict.

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4. An example: The high school curricular associate, similar to the foreman, must work and guide teachers in his department to work towards standards and goals desired by administration, by the public, etc. These probably are not the goals and expectations of the teachers in his department.

5. The teacher is also a husband or wife, a member of his professional association, perhaps a 'black' or a member of some other minority group, a woman, a parent. Associate members of each of these groups may expect him to act in a manner favorable to them and different from that expected of him as a school official or teacher.

6. Classic to the teachers are instances where instructions are given by administration to the effect that marks and attendance must be turned in one to three days before a major holiday together with the admonition that it is imperative that students be kept in school to a specific hour of the last day.

Following up on the work of Kahn et al, Tosi (1971) found that role ambiguity was not significantly associated with job satisfaction, job threat, nor effectiveness; role conflict, however, was negatively correlated with job satisfaction and positively with job threat but was not significantly correlated with effectiveness. The relationship however was more clear when participation (rather than role) was the criterion--participation correlated positively with job satisfaction and negatively with job threat. A second finding of Tosi's was that higher influence levels were generally associated with lower levels of job anxiety.

These two findings generally support the work done earlier by Argyris (1964) that increased control over the work environment is related to reduced levels of job anxiety.

Vroom (1964) however contented that a particular feature of a work role cannot be viewed without reference to the relevant personality features of the individual. In particular, he suggested that when things go well, individuals attribute this to their own ability and inherent nature; when they go badly, they attribute it to others.

That the situation may not be so simple, however, is suggested by Jackson (1966) who found that persons who had high status inconsistency also had more high stress than those who were consistent or only moderately inconsistent. A high percentage of persons with a racial-ethnic rank superior to their occupational or educational rank, reported high stress symptom levels. The same was true for those whose educational levels were superior to their occupational levels.

Jackson concluded that the relative positions of the inconsistent's achieved and ascribed status ranks influence the way in which he defines his difficulties. A person whose achievement ranks are inferior to his ascribed rank views his situation as one of personal failure, deficiency, and has a tendency to indulge in self-blame. The inconsistent whose achievement ranks exceed his ascribed rank usually is evaluated and evaluates himself as a success since he has won his position despite the handicap of a low-ethnic status. He therefore is less likely to blame himself but sees his problems as stemming from the unjust actions of others.

A control for sex revealed marked differences between the responses of males and females--when a woman's education is superior to her husband's occupation, she is more likely to report a high stress symptom level.

Further, from a demographic viewpoint, Indik, Seashore, and Slesinger (1964) found that three indices of psychological strain--job related, economic, and psychosomatic--were dependent upon age, sex, and education. They found that: (1) Job-related strain is generally higher among men, lower with older people. Although college educated women showed no age trend, women with some education beyond high school, showed a rise in job-related strain with advancing age; those with advanced degrees had a very high level of job related strain. In general, the authors felt that the 'U' trend was upright for women and inverted for men. (2) Economic strain generally was positively correlated with education and peaked in the 20-39 year age range. Women with some education beyond the high school again had high scores;

(3) Psychosomatic symptoms were fewer among older people and those with more education but were highest among young women.

Gurin, Veroff, and Feld (1960) had previously found significant age, sex, and education level differences on psychological anxiety, physical health, immobilization, and physical anxiety. They interpreted their results, however, in terms of the differential social roles that accompany age, sex, and educational differences.

In one of the few studies which have investigated the relationship between the role strain of secondary school teachers and selected organizational and personal variables, O'Donnell (1970) found that: (1) The amount of tension created by organizational structure was significantly greater for men than women; (2) The amount of tension created by a competence factor was significantly greater for women than for men; (3) Younger teachers showed greater anxiety than older teachers with respect to role overload and competence; (4) Holders of master's degrees showed the greatest amount of job strain; (5) Role strain had a substantial correlation with the rates of teacher termination in the schools under study.

Palola (1967) concerned with the relationship between a formal and changing organization type and three types of role strain--role uncertainty, role disparity, role incompatibility--used seven structural variables that attempted to control the degree of permissiveness or flexibility, i.e. degree of specialization, emphasis on rules and regulations, amount of work pressure, number of formal administrative levels, clarity of goals, differentials in influence-authority power, and amount of individual freedom. In attempting to answer the question:-

'Are certain structural features more important than others in generating the different role strains?', he found that emphasis on rules contributed to role strains, particularly role incompatibility. Differences in interpretation of work rules by organizational members complicate the performance of work roles and create the feeling among workers that respective roles conflict with each other. Furthermore, strains generated at higher levels within an organization where close superior-subordinate interaction exists, generate similar strains at lower levels. Style of supervision is an important intervening variable in that it sets the tone of interactions between superiors and subordinates, no matter what the organization type is.

These findings are supported by work previously done by Mitchell (1958) and Getzels and Guba (1954). Mitchell found that the more sharply roles are defined in a system, the more intense will be the resultant strains when role conflict occurs. To Getzels and Guba, intensity of role conflict is a function of the rigor with which the role expectations are defined within a given situation.

Gross (1970) was concerned with a broader aspect of work stress than just role. He identified three types of work stress: (1) The stress of organizational careers. In gaining security from stress by associating one's self with an organization that can offer tenure and protection, the person also subjects himself to the uncertainties and tensions of the organization. Translating this to a teaching situation, it can be concluded that the major risks for a teacher are those of losing his job, being transferred, of retirement or disengagement. There also are risks of career advancement, and consequently of status, because

position is transferable to the community at large. (2) Task stress or the difficulty of performing satisfactorily the tasks one is asked to perform; (3) Organizational structure stress, i.e. the stress that results from the demands and needs of working together to obtain some end.[7]

Stress in a Role Concept. What the literature says concerning role stress is that structure, demography, and personality are among the batteries of variables that lead to differences in prescribed and perceived role and consequently to a particular role behaviour, which has effects not only on the individual but also his working associates. To the extent that these associates cannot condone such behaviour, they attempt to change the structure, the prescribed role, and the role behaviour of the sender, as shown in Figure 1, below.

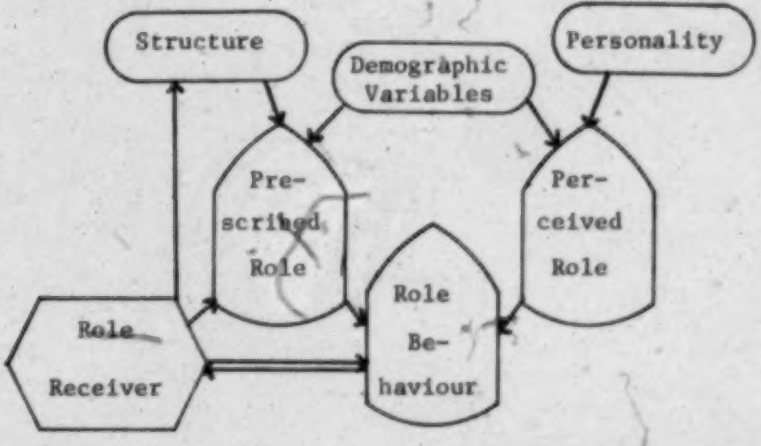

Figure 4

The Concept of Role Stress

7. A number of models exist that explain some facet of role stress in organization life: unemployment--Adams (1939), Eisenberg and Lazersfeld (1938), Watson (1942); demotion--Goldner (1965), More (1962), Wilensky and Edwards (1959); role conflict--Gross (1964), Weber (1966), maintenance of distance from the organization--Gouldner (1958); leisure--Wilensky (1961).

B. PERSONALITY

What does the literature suggest about the personality of an individual that might affect the stress he experiences within an organization and what implications might this have for the structuring of educational institutions--particularly Victoria Composite High School?

This study examined the four attributes Kahn et al (1964) identified as dominant in high role conflict and role ambiguity stress situations. A fifth attribute, machiavellianism, which previous studies had shown was not significantly correlated with the four others but did appear to be a component in certain types of high stress, was included. Consequently, the survey of the literature attempted to identify the affect of each of these five attributes.[8]

1. Need Achievement

When Che Guevara (1968) writes of the very difficult conditions under which guerilla warfare is fought, he implies not only that physical conditions can and are likely to be stressful, but that need for achievement can spur a human being to great self-sacrifice. And Lazarus (1964) argues that lack of a desired level of achievement contributes to stress. When a goal is threatened, stress results. The more that an individual is motivated to achieve that goal, the more likely is he to perceive it as being threatened. The more threatened he feels, the greater will be his attempts to cope with the threat. But what is this all encompassing need achievement?

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8. The reader is reminded that this is an exploratory study. In keeping with this philosophy, relationships given in the literature between personality and stress are examined. These relationships may or may not be tested or used later within this study.

McClelland (1958, p. 181) defines it as the pursuit of a goal, i.e. success in competition with a standard of excellence. Such a standard of excellence may involve competition with others (status achievement) or self-imposed requirements of a good performance (expertise achievement).

Kahn et al (1964) suggest that those who are status-oriented have high stress levels because of role conflict. These individuals have low job involvement and lower satisfaction levels. Furthermore, in that they might wish to spend little time on the job, they probably complain of work overload. To expertise-oriented persons, organizational structure and time pressures, which do not permit them to do their desired excellent job, are a cause of stress.

Sales (1970) supports these findings by showing that the actual work load and its effects are related to need achievement and are not related to the actual work that is required. Sales further explains that a curvilinear effect exists in stress--a certain level of anxiety increases productivity; a higher level, coupled with high need achievement, results in subjects trying so hard that they then defeat their own best efforts.

If a changing climate in teaching exists, and if that climate demands innovation, the willingness to take risk is an important variable. Lieblich (1968) suggests that although need for achievement may increase the amount of risk taken, stress would decrease it. The two effects would balance each other out, possibly resulting in a middle-of-the-road path being taken.

Vogel, Raymond, and Lazarus (1959) and Burnstein (1963) suggest that a history of success or failure in a particular motivational direction might be a contributing factor to level of stress when that person is faced with the same situation a second time. Miller and Worchel (1956) however suggest that self-image, and not need achievement, is the governing variable in performance, in cause of stress, and in the ability of the individual to recover from stress.

The conclusion that can be drawn from Schmeidler, Bruel, Ginsberg, and Lukomnik's (1965) study is that those teachers who are both high and low in all of three variables--need achievement, anxiety, and organizational stress--will consistently have poorer performance records than those who are between the two extremes.

Koons and Birch (1964) and Bruckman (1966) show that tests do not measure the need achievement attribute similarly in males and females. If Bruckman's (1966) hypothesis that intelligence and need achievement are positively correlated is related to the school situation and to Lichtman's (1970) study, showing that the organizational structure, i.e. presence of a bureaucracy and lack of production goals, will be important variables in high stress, it might also be argued that better educated teachers working under bureaucratic conditions would experience high levels of stress, and that that stress would have as its causal base both need achievement and task structure.

The Scott (1961) study suggests that high school teachers have higher need achievement levels relative to other teachers; McClelland (1965) might lead the researcher to the conclusion that the need

achievement variable is stable over time and that even high school teachers would not be particularly high in this variable when compared to other occupational groups, particularly entrepreneurs.

In summary, need achievement, particularly excellence or prestige orientation and its related variables--self-image and fear of failure--governs the effectiveness of output and the risk-taking willingness of teachers. It abets different levels and different causal factors of stress. The organization setting tends to alleviate or aggravate this according to the type of need achievement dominant within that individual.

2. The Eysenck Personality Inventory Variables

Eysenck (test manual) defines the neurotic personality as one which tends to be

> . . . emotionally over-responsive and to have difficulties in returning to a normal state after emotional experiences. Such individuals frequently complain of vague somatic upsets of a minor kind, such as headaches, digestive troubles, insomnia, backaches, etc. and also report many worries, anxieties, and other disagreeable emotional feelings. (pp. 7 - 12).

Such an individual has excessive and conflicting motivations, experiences a wide variety of emotional states; is frequently impatient, jittery, irritable, sometimes grouchy and short-tempered. He tends to be self-oriented, sometimes defensively conceited but more often burdened with self-doubts and recriminations. Moreover such states are apt to change rapidly and without apparent cause. (Kahn et al, 1964, pp. 249-250).

In a popular context, the extravert is regarded as one who is seldom troubled by tension or anxiety; he tends to be

> . . . involved in but not immobilized by potential failure . . . he approaches risks with a spirit of adventure and even enthusiasm. He sees problems as existing in the environment, not in himself. . . . (he shows) persistence in active coping efforts in the face of stress. The introvert, on the other hand, tends to be highly ego-involved in achievement or competitive situations and thus vulnerable to the threat of failure. He is more concerned with security than with adventure . . . Moreover, he is apt to be acutely bothered by tension and anxiety; anxiety has more conscious manifestations for him than for the extravert. (Kahn et al, p. 265).

These definitions however are not universally accepted. Furthermore, the research on the Eysenck Personality Inventory and other measures of extraversion - introversion,[9] neuroticism - emotional stability, and lie score is extensive but contradictory.

That subjects may be under severe stress, without being aware that they are, is suggested by the Howarth (1965), Akhtar and Kafiluddin (1971), and Marshall (1959) studies. In that introverts have a greater tendency to internalize; extraverts to externalize, particular personality correlates contribute to specific psychological or psychosomatic reactions--headaches, ulcers, overt hostility.

Teachers who are extraverts, because extraverts tend to be vocal in their grievances (Eysenck, 1961), would complain more, have high stress scores and be much more dissatisfied with existing conditions (organizational practices). Introverts, on the other hand, would be the oppo-

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9. An extensive number of studies have been done showing that a different electroencephalogram pattern exists for extraverts and introverts. Much of this is technical information which the author was unable to understand. These authors are listed in the bibliography and are: Gottlober (1938), Henry and Knott (1941), Mundy-Castle (1955), Nibylitsyn (1963), Savage (1964), Glass and Broadhurst (1966), Martin and Urban (1966), Fenton and Scotton (1967), Hume (1968), and Gale and Coles (1969).

site: their tendency to hide their true feelings would result in low stress scores and low dissatisfaction scores. In stress level comparisons for a total population, the two would probably counterbalance each other. Farley's (1966) and Howarth's (1963) studies suggest that differences in learning patterns and performance abilities cause particular reaction patterns which unwittingly create organizational and collegial stress that might heighten a teacher's own stress level, i.e. the introvert, in withdrawing from colleagues under high stress conditions, may precipitate a reaction from them that aggravates his own problems.

The study of Colquhoun and Corcoran (1964), Davies and Hockey (1966), Frith (1967) might lead to the conclusion that introverts do better teaching morning classes and those subjects at the high school level that are quieter--mathematics, shorthand, etc.--and that extraverts might be happier with afternoon classes and would like vocational or activity courses where the noise level is high.

In that the efficiency of extraverts tends to decrease as the length of the task progresses (Davies and Hockey, 1966), there would be less tendency for teachers who are extraverts to follow tasks through in minute detail to completion, but a greater tendency to initiate projects. If these teachers are in administrative, curricular associate, or team leader positions, there might be a tendency for others to feel stress because of inadequate planning.

Howarth's (1963) findings that extraverts underestimate time intervals might lead to the supposition that extraverts might have a greater

tendency to be late, or to leave work until the last minute, and consequently not be as prepared as the situation might demand. Also, in that their performance is variable (Howarth, 1963), role senders and receivers might be disoriented by not being able to standardize their expectations of these teachers.

That neurotic individuals throw themselves into their jobs with vengenance but rate their job satisfaction levels low, and that their sense of futility, tension level, and experienced role conflict are significantly related to neuroticism, are the findings of Kahn et al (1964). These authors also suggest that extraverts experience significantly less tension and project a better public image under high role conflict situations than do introverts.

Extraverts might provide further alienation by the more volatile and severe nature (Eysenck, 1965; Eysenck, 1971; Craske, 1968; and Fine, 1963) of the personal problems that they bring endogenously to the classroom. Gutman's (1966) suggestion that the extraversion-introversion level and the neuroticism vs. emotional stability dimension change with age and differ with sex might explain some of the deviancies in behaviour attributable very loosely to the 'middle aged teacher'.

Lie scales have been developed in order to detect motivational influences such as faking 'good' answers and malingering. They have therefore been considered an auxiliary means in personality assessment rather than an operational index of a personality consistent with non-test behaviour. Based on a number of previous studies, Wilde (1966) argued that lie variables deserve a more independent role in personality measurement than that of a mere suppressor and that they predict

a difference in characteristics of 'self-defensiveness' versus 'self-criticalness'. Wilde hypothesized that self-defensive individuals avoid a direct answer when asked whether or not they possess qualities of which they are not sure how others will evaluate. He found that (1) Patients sent to a psychiatrist and alcoholics sent to Alcoholics Anonymous, had significantly higher lie scores than those who went voluntarily and that lie scores were significantly higher in psychosomatic patients than in neurotics ($p < 0.0005$); (2) In general, individuals with a strong defensive attitude evaded giving precise answers to items about which society holds rather diverse views.

3. Egalitarianism-Authoritarianism

To the original authors, the concept of authoritarianism embodied nine personality variables (Sanford, 1956), most important of which were: (1) rigid adherence to conventional middle class values and a tendency to condemn persons who violate these values; (2) submissive, uncritical attitude toward authority; (3) opposition to subjective, imaginative, or tender-mindedness and a pre-occupation with the dominance-submission, strong-weak, leader-follower dimension; and (4) identification with power figures.

To Levinson and Sanford (1944), authoritarianism was an explanation of anxiety[10]

> . . . the very same subjects who feel that they must keep busy are also most concerned about the dangers to mental health of 'overwork'. 'too long hours', 'mental fatigue', 'undertaking too much'.

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10. Interpretation is that of the author of this study and not of Levinson and Sanford.

Studies in authoritarianism that followed offered a specific premise: the authoritarian individual is under particular stress in a setting which has ambiguous contradictory standards and expectations. He finds it difficult to shift from one set of expectations to another without experiencing strain.

The Jensen (1957) study suggests that teachers should be lower in authoritarianism than the population at large, but that those who are high on this dimension should be concentrated in vocational education, the arts, and mathematics, and chemistry.

The stress felt by various persons because of role ambiguity and role conflict will be a function, however, not only of authoritarianism (Millon, 1959; Budner, 1962; Getzels and Guba, 1955) but also of their psychiatric stability (Jensen, 1957), ego-orientation (Millon, 1959), and isolation (Haythorn, 1966). Kahn et al (1964) suggest that role conflict of flexible persons will be due to role overload; of rigid persons to unreasonable time pressures, high dependence on others, and to unclearly defined responsibilities and structures. Although flexible persons will be able to handle higher levels of tension better than rigid persons, they will be more subject to 'ups and downs'.

How does the school organization handle these two types of persons?

Block and Block (1952) suggest that persons lower on the authoritarian scale who have specific preferences of their own, might need to be convinced rather than ordered to behave in a particular manner; Nadler (1959) that those high in authoritarianism are much more likely to accede to authority or group pressure.

Schachter's (1965) findings would suggest that the more tolerant teachers, who are more likely to look for reasons behind the behaviour of others and to become involved in others' lives, would be more likely to experience anxiety in moderately threatening circumstances but would also be significantly more productive.

If the conclusion of Wispe and Lloyd (1955) can be applied to teaching, better teachers would prefer more permissive working relationships, would feel less threatened by superiors; poorer teachers would prefer more structured settings.

And finally, the study of Jones (1955) suggests that, all other factors being equal, authoritarianism is a stabilizing factor; a decrease in stress level may be attained by instinctively viewing the environment in the light of a particular authoritarian level--those that are highly authoritarian would see more stability within the organizational setting; those who are less authoritarian, a less stable situation.

4. Machiavellianism

Since the time when Machiavelli published advice on how to manage others in The Prince in 1532, his name has come to designate the use of guile, deceit, and opportunism in interpersonal relationships. Traditionally, the machiavellian has been someone who views and manipulates others for his own purposes. Christie, Geis, and Nelson (1970) and Geis (1968) describe the most characteristic traits of the high machiavellian personality as:

(1) Emotionally detached from others and their wishes and from the implications of his own behaviour as well. The high mach appears

unresponsive to personal or ethical concerns of others. Rather, he depersonalizes the situation and approaches it from a cognitive-probalistic orientation;

(2) He is guileful, deceitful, manipulative, and has an acute and opportunistic sense of timing in social situations. This sense of timing is not based on sensitivity to the other person, his needs or wishes; it is more likely to be based on a sense of what is the logical next step, i.e. what will work;

(3) Not only does the high mach size up the situation but he tests the limits to determine how much he can get away with;

(4) He is power oriented and values power in himself and in others. He therefore tends to initiate and attempt to control the bargaining structure in a group;

(5) He is critical, skeptical, not easily impressed; and finally

(6) He is basically distrustful of people in general and questions their motivations.

What implications does the Machiavellian personality dimension have for a research study of causes of stress for teachers?

Only one study, that of Gemmill and Heisler (1972), has been published to date, that investigates the relationship between machiavellian orientation and job strain. The authors found that high mach orientation was significantly correlated with job strain, job satisfaction, and perceived opportunity for formal control--but not in the direction hypothesized! Managers scoring higher on the mach scale reported being

more frequently bothered by feelings that they were unclear of opportunities for promotion, they were uncertain what their superiors thought of them, and they were not able to satisfy the conflicting demands of organizational superiors. They perceived less trust and openness being displayed, and reported significantly less satisfaction with their progress in the company and with the company overall, i.e. these managers, then, reported higher job strain, lower job satisfaction, and less opportunity to control the organizational climate. There is no reason to believe that teachers who are high on this dimension would not harbour the same apprehensions.

In that high machs are highly independent (Harris, 1967), and show more tendency to manipulate and cheat, particularly when the rewards are high and risks are low (Geis, 1965), it might be expected that teachers with this attribute might experience much less stress due to role ambiguity (Christie and Boehm, 1970). A negative reaction however could result, in that the teaching profession (and society generally) puts a high value on honesty. The sensitivity of the high mach to peripheral cues, might well cause him to experience stress due to perceptions of lack of personal influence. If the high mach's manipulations are successful, the stress levels of low machs, who cannot condone this behaviour, might well rise on the role ambiguity factor.

Since high Machs weigh risks carefully (Bogart et al, 1970) but do have a tendency to take high risks (Rim, 1966); since they tend to have strong influencing power in a group decision situation (Rim, 1966) and since the highest mach in a group is most likely to be chosen as

leader (Geis, 1968), and since success of that group will be directly related to the Machiavellian score of the leader (Geis, 1968), stress due to 'power play' situations might be inevitable, particularly when a group is composed of more than one high mach or when high mach leaders are attempting to obtain limited resources for their particular group. More harmonious relations might be achieved by manipulating the high mach(s)--by pairing him with an attractive partner (Bogart et al, 1970) and by factual, rather than bandwagon, appeals (Epstein, 1969; Harris, 1967).

5. Summary

In what ways does personality affect stress? Those individuals who are high in need achievement could be of two types--status or expertise oriented. This will affect how each perceives both his work load and the time pressures which face him. The high need achiever tends to have high levels of performance and a high willingness to take risk. When a very high level of stress exists, however, productivity and desire for risk taking drops.

Extraverts have different patterns of behaviour from introverts. They tend to complain more and to have higher stress scores. Their decreasing efficiency as a task progresses, their under-estimation of time intervals, and their variable performance, together with the more volatile and severe nature of problems which they bring endogenously to the job environment, might create stress for colleagues with whom they work.

The authoritarian finds ambiguous situations stressful, but this level of stress is a function of his psychiatric stability, ego-orientation, and isolation. To flexible teachers, stress is a function of role overload. These same individuals, however, create stress for others by their emotional 'ups and downs'. Furthermore, this personality dimension colors the view of organizational structure--structure tends to be viewed as flexible or rigid depending on the authoritarian characteristics of the individual.

The high mach experiences more job strain, lower job satisfaction, and feels he is less able to control his organizational climate. He has less tendency however to experience stress due to role ambiguity, prefers to take high risks and has a strong influencing power in a group decision situation. His personality may force him into 'power play' situations and thus heighten his role conflict stress levels.

The survey of the literature shows that at least these six personality attributes--need achievement, authoritarianism, neuroticism, extraversion - introversion, self-criticalness - self-defensiveness, and machiavellianism--do affect the way in which an individual reacts to stress.

C. ORGANIZATIONAL STRUCTURE

The question that must always be asked is whether personality governs perception of structure or whether there are structural variables within an organization that would engender feelings of job-related stress, no matter what personality variables were or were not present. Structure or perception of structure has dysfunctional results for both the individual and the organization.

To the individual. Following findings that status was uncorrelated but tension was negatively correlated with job satisfaction, Kahn, Wolfe, Quinn, Snoek, and Rosenthal (1964) concluded that managerial employees, as compared to those of lower rank, were more emotionally susceptible to role stress in performing their supervisory and problem-solving functions.

Lichtman (1970) disagreed. In a study of middle managers, first-line supervisors, and working-level technical personnel employed in a government office, he found that lower level workers have high job-related tension and low job satisfaction levels resulting from feelings of inability to fully understand the requirements of the jobs and to resolve adequately the conflicting demands of personal values with those of role senders. Low levels of job satisfaction were also linked to greater feelings of anxiety over a perceived lack of power.

In a study of teachers and nurses and deterioration of organizational commitment, Hrebiniak and Alutto (1972) found that nurses feel their employing organizations are interferring with professional role activities; teachers express greater dissatisfaction with their organizations' reward system. They also found that organizational commitment in

both groups is a function of job tension, length of service, promotional policies, and level of interpersonal trust.

Other studies on structural precipitators of stress include those of Muthayya (1970), Gross (1970), Neel (1955), Jaques (1966), and Rizzo, House and Lirtzman (1970). Neel found that supervisory practices, physical working conditions, job satisfaction and attitudes toward company policies showed significant correlation with job-related tension. Jaques (1966) found that hard work and long hours were not sufficient conditions for inducing stress symptoms but that responsibility for the completion of tasks which were either impossible or too difficult were.

Muthayya (1970) in a study of job tensions among block development officers found that lack of authority, autonomy, and information needed to do a job, overwork, incompatibility of demands by referrent groups, having to act against one's conviction, and a lack of feeling of achievement, contributed to tension.

Rizzo, House and Lirtzman's study (1970) developed and validated scales of role conflict and role ambiguity against measures of leadership behaviour, satisfaction, anxiety, propensity to leave, and demographic variables. They found that goal conflict and inconsistency, delay in decisions, distortion and suppression of information, and violations of the chain of command tend to be associated with high role conflict and ambiguity.

According to Gross (1970), stress in the organization is attributable to a routinization of process and the consequent use of rules as a guide to behaviour:

> . . . members (must) be willing to accept the categories and treat them in the required way. Persons who work under those conditions must be willing to accept conformity--that is, they

> must either be willing themselves to be treated as a category or to treat objects in the way required. This may mean that the employees shall have faith in the superior wisdom of the categorizers . . . accept the sense of themselves as powerless to affect major decisions, particularly policy decisions and not be too upset by such powerlessness. (p. 64).

To the organization. But not all the dysfunctions are to the individual. Schachter (1959) demonstrated that when stress levels are high, social needs become greater; if there are no channels within the organization to meet these increased needs, workers will transfer their affiliation, loyalty, and productive efforts to external organizations. Furthermore, employees will be more critical in appraisals of themselves and of the organization itself and will tend to make more comparisons with other persons and organizations.

In experimentally created groups, French (1951) found that those with high threat and frustration indices also tended to bicker, withdraw, find scapegoats, etc. more than those with lower indices.

Hamblin (1958) in comparing groups in twenty-four crisis situations with other non-crisis groups, found that integration decreased as a result of the crisis--people tended to behave in self-oriented ways and refused to cooperate or to help each other.

But Hershey (1972), in comparing productivity, absenteeism, and lateness, of twenty-five employees who knew they were being laid off, with a control sample of the same number, found no significant difference in absenteeism and lateness between the samples nor between the behaviour of the groups who were being laid off for three months before lay-off and after knowledge of this fact. Production improved slightly after knowledge of lay-off.

This may have implications for the findings of two authors, Duncan (1972) and Price (1971) who argue that perception of structure, and not the structure itself, is the important variable in stress. Duncan (1972) found that complex-dynamic structure of organizations contributes more to uncertainty, but because of a significant difference in perception of uncertainty between manufacturing and research firms, remarked that an organization might have no properties aside from the way in which people perceive it.

Price (1971) examined structural and conflict stress in relation to four indicators of job satisfaction. Structural stress did not have a significant effect on teacher job satisfaction; teacher perception of the problems did.

The survey of the literature does show that structure, or perception of structure does affect whether job-related stress will be experienced with functional or dysfunctional results towards the individual and the organization.

III. INTERPRETATION OF THE DATA

The questionnaire given to teachers at Victoria Composite High School asked questions that attempted to determine (1) the type and magnitude of stress felt by each teacher; (2) his personality; (3) certain known data about the individual (demography); and the (4) structural conditions within which he is situated.

Statistical procedures used to analyze the data include correlation matrices, principal components factor analysis, discriminant analysis on the stress-demographic pairs of variables, canonical correlations between each of the stress items and the three batteries of independent variables--demographics, personality, and structure--and partial correlations. (Refer to Figures 1, 2, 3 on pages 13 to 15). The findings of the analyses are reported in this chapter which is in six parts:

A. COMPARISON OF SAMPLE TO VCHS POPULATION discusses the characteristics of the particular sample and compares the sample to the total population;

B. THE STRESS VARIABLES AND STRESS FACTORS is an analysis of the fifteen questions that served as indicators of the magnitude and type of job-related stress at the school;

C. STRESS AND DEMOGRAPHICS relates stress, using discriminant analysis and analysis of variance, to the demographic variables.

D. STRESS AND PERSONALITY relates the ten personality dimensions used in this study with the stress variables and factors of part B;

E. STRESS AND ORGANIZATION STRUCTURE deals with the same stress variables and stress factors and relates them to ten organizational practices within the school setting;

The final section

F. STRESS, DEMOGRAPHICS, PERSONALITY, AND STRUCTURE connects the information obtained in parts C, D, and E.

A. COMPARISON OF SAMPLE TO TOTAL VCHS POPULATION

Seventy-seven of one hundred eight teachers at Victoria Composite High School answered part I; sixty-four, part II; and 63, part III, of the questionnaire. Sixty-one complete sets could be identified.

The original seventy-seven included twenty-five females and fifty-one males. The largest number of respondents, twenty-seven, were from age thirty-one to forty. Seventeen were less than thirty, eighteen in their forties, and fifteen were more than fifty years of age. Fifty-eight of the respondents were married, ten were single, and nine were in other categories.

More than forty percent of the teachers, 34 of the 77, were being paid for six or more years of University education, i.e. at least the equivalent to a Master's degree. Another fourteen were being paid for two degrees. Seven teachers (nine percent) reported that they did not have four years of University education; four of these were, however, being paid at the degree level.

Responses were received from five administrators, fourteen in the curricular associate category; from three counsellors, fifty-three teachers, and two who classed themselves in combined categories.

Twenty teachers from the mathematics-science subject area, twenty-two from the humanities, twenty-four from the vocational area, five from physical education and counselling, and six teachers from the T. D. Baker School[1] replied to the questionnaire. Subsequently, it was learned that a few T. D. Baker teachers had classified themselves in the vocational category; these two groups were therefore amalgamated.

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1. The T.D. Baker School is incorporated into Victoria Composite High School and has 13 teachers.

Also, because a degenerative condition resulted when statistical procedures were employed using the physical education and counselling group, these five teachers were grouped with the humanities.

The majority of the respondents, 53 of the 77, received their elementary education in Alberta; another fifteen in another Canadian province. Of the nine who were foreign educated, three were American, and six were European.

The majority of the respondents do not participate actively in their professional association. Twenty-three of the seventy-seven, however, presently hold some executive or committee position. The majority of teachers (see Table I) also claimed they were content to remain a teacher or counsellor but at least another twenty aspired to a better paying position than they had during the 1973/74 teaching year.

TABLE I

PRESENT POSITION AND DESIRED POSITION

Teachers of Victoria Composite High School

December, 1973

	Present Position	Desired Position
Teacher or counsellor	58	41
Curricular associate	14	11
Administrator	5	12
Central office staff	0	13

Table II shows that thirty teachers have more than ten years of teaching experience but just over ten percent of the teachers have remained at VCHS for more than ten years. Almost half, 37 of the 77, were in their first five years at VCHS.

TABLE II

TOTAL TEACHING EXPERIENCE AND
TEACHING EXPERIENCE AT VICTORIA COMPOSITE HIGH SCHOOL
As Indicated by Teachers on the Staff, December 1973

No. of Years	No. of Teachers By Total Teaching Experience	No. of Teachers By Years at VCHS
One or two years	11	21
Two to five years	8	16
Six to ten years	28	30
Eleven to twenty years	17	7
More than twenty years	12	2
No answer	1	1
Total	77	77

Question 20 of the first part of the questionnaire stated: "I regard myself as a person who is most concerned with . . ." and gave five choices. Fifteen teachers were most concerned with methodology; thirty-two in changing the life style or behaviour patterns of their students; twenty-five in getting the content of the subject across to their students and the remaining five in self-improvement.

The question regarding order of birth revealed that twenty-three were the first or only born; eleven, the oldest of the opposite sex from the first born; eight were the "baby" in the family; and twenty were born close to the middle.

Of the sixty-two teachers who replied to questions concerning the length of time since they had taken a University or other course, between twenty and twenty-five percent reported no training within the past five years (Table III).

TABLE III

LENGTH OF TIME SINCE PREVIOUS TRAINING
AT AN EDUCATIONAL INSTITUTION
Victoria Composite High School Teachers
December, 1973

Length of Time Since Previous Training	University Course	Other Institution
Taking course this year	14	16
During the 1972/73 year	8	13
Within the last two to five years	24	20
Within the last six to ten years	10	8
More than ten years	6	5

To see if this sample was representative of the total VCHS population, comparisons were made regarding sex, marital status, age, education, position and experience.

Representation (Table IV) on the basis of sex, marital status, age, was reasonable--generally between the seventy and eighty percent range.

Representation by education, however, was unbalanced. Of the teachers who had the equivalent of six years of training, and thereby generally had written a thesis or research paper, the response was exceptionally good. Of those teachers who had five years of education, i.e. two bachelor's degrees, the response was poor.

Response on the basis of experience was more difficult to evaluate. In the past, certain types of teaching experience were not classified as such for salary purposes; at other times or for other teachers, experience in industry was termed 'teaching' for grid placement. There is however nothing in the comparison of the sample and the total population to suggest that the respondents who answered were not representative of the entire staff.

TABLE IV

COMPARISON OF SAMPLE AND TOTAL POPULATION

Teaching Staff at VCHS

Edmonton Public School Board Computer Printout

April 22, 1974*

	Sample	Population	Percent
Total No.	77	108*	73
Sex			
Female	25	32	78
Male	51	71	72
Marital Status			
Single	10	13	77
Married	58	76	76
Other categories	9	14	64
Age			
Under 30 years	17	20	85
31 - 40 years	27	39	69
41 - 50 years	18	22	82
Over 50 years	15	22	68
Position			
Administrators	5	6	83
Curricular Associates	14	14	100
Teachers	58	83	70
Education			
Under 4 years	3	1	--
4 years	26	34	76
5 years	14	24	58
6 years	34	36	94
Teaching Experience			
0 - 2 years	11	8	--
3 - 5 years	8	14	57
6 - 10 years	29	30	97
More than 10 years	29	51	57

*Questionnaires were answered December, 1973. April computer printout represents some discrepancy: 103 rather than 108 teachers.

B. THE STRESS VARIABLES AND STRESS FACTORS

Each of the fifteen items in the job-related tension index used to measure stress at Victoria Composite High School (Appendix B, Sheet 1, items 21 to 35) were:

(1) Tested for differences of means from the overall mean. The observed distributions were compared to expected distributions using the χ^2 goodness-of-fit test;

(2) Correlated with each other;

(3) Factor analyzed.

This section, consequently, is organized on the above basis.

1. Comparison of Stress Items

Comparison of each of the stress items to the mean for all fifteen variables (Table V) indicates that teachers at VCHS have significantly high ($p < .001, .01, .005$) stress levels on items 4, 9, and 13, i.e. they feel that they have too heavy a work load, worry about decisions that affect others, and feel that the amount of work they have to do may interfere with how well it is done.

Three of the fifteen items (6, 10, 12) have significantly lower means, i.e. relatively low overall stress results because of feelings of inadequacy due to lack of qualifications for the job, with whether the teacher will be liked and accepted by people at work, or with what other people expect of him/her.

These findings are again confirmed by the χ^2 goodness-of-fit test which compares the frequency distribution of responses to the expected responses within the category--i.e. the category average.

These expected frequencies are:

Never	10.87
Rarely	31.27
Sometimes	21.47
Often	9.47
All the time	2.93

Specifically on item 4, twenty-nine teachers, compared to an expected 12.40, answered that the quantity of work 'often' or 'all the time' was so great that they could not possibly finish it in an ordinary work day.

While no teacher felt that a worry about decisions that affect others was always a problem (item 9), twice the expected number felt that this was 'often' a problem.

In item 13--that the amount of work interferes with how well it is done--four or five more teachers than expected in each category indicated that they 'sometimes', 'often' or 'all the time' had this problem.

Twenty-nine of the seventy-seven teachers, i.e. eighteen more than anticipated, felt that they were fully qualified to handle their job (item 6); eleven more than expected 'never' or 'rarely' worried about being liked and accepted by people at work (item 10); and fourteen more than anticipated 'rarely' worried about what other people expect of them (item 12).

Additionally, actual frequencies on item 3--that teachers do not know what opportunities for advancement or promotion exist--are significantly different from expected frequencies; the difference is due to the wide dispersion of scores, i.e. a disproportionate number of teachers are in both the very low and the very high groups. To most teachers,

TABLE V

RESPONSES TO FIFTEEN STRESS QUESTIONS

Victoria Composite High School Teachers

December, 1973

Stress Items No.	Frequency Distributions 1 Never	2 Rarely	3 Some-times	4 Often	5 All the time	Mean	Standard Deviation	χ^2
1	4	29	31	11	1	2.684	.836	10.25*
2	11	35	23	7	0	2.342	.841	4.12
3	21	25	15	7	8	2.421	1.278	22.06*
4	7	18	22	19	10	3.092	1.180	33.67*
5	3	37	19	13	4	2.711	.977	8.74
6	29	32	14	0	1	1.842	.817	43.60*
7	10	33	16	13	4	2.579	1.086	3.27
8	8	38	21	8	1	2.421	.868	3.72
9	3	21	33	19	0	2.895	.826	25.23*
10	14	39	21	2	0	2.145	.743	11.44*
11	8	38	17	10	3	2.500	.987	3.17
12	11	45	13	7	0	2.211	.805	12.94*
13	5	25	25	14	7	2.908	1.073	12.83*
14	12	25	33	5	1	2.447	.885	11.15*
15	17	29	19	7	4	2.368	1.094	4.93
Expected Frequencies	10.87	31.27	21.47	9.47	2.93			
All Items						2.504	.953	211.12

* $p < .05$

concern with knowing the promotional opportunities that exist is 'never' or 'rarely' a problem. To another small group however this is always a problem.

Actual frequencies in item 14--teachers feel that they have to do things that are against their better judgment--and item 1--the fact that teachers feel they have too little authority to carry out their responsibilities--were found to be significantly different from the expected frequencies. In each case, the frequency was more concentrated in the middle category, i.e. a disproportionate number of teachers felt they 'sometimes' were faced with these situations. This result is also confirmed by the relatively small standard deviations for these items.

2. Stress Items Correlations

Examination of the correlation matrix of the fifteen stress variables (Table VI) shows that approximately eighty per cent of the items are correlated at the $p < .05$ level ($r = .258$). Even at the .01 level, the number of correlations remains high. If only those correlations above the .45 level are examined, however,[2] certain groupings of mutually correlated items become prominent, especially items 4, 5, 13, 14, and 15 which appear to be concerned with work load. An additional two groups, one consisting of items 1, 2, 5, 9, which suggests role conflict; and the other consisting of items 7, 8, 12, 13, and 14 are somewhat weaker with not all of the items correlating with each other at the designated 0.45 level. This last grouping suggests a role ambiguity dimension.

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2. Arbitrarily chosen.

TABLE VI

PEARSON PRODUCT-MOMENT CORRELATION MATRIX

CORRELATING RESPONSES TO FIFTEEN STRESS VARIABLES

As Reported by Teachers at VCHS

December, 1973

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.000														
2	0.464	1.000													
3	0.109	0.169	1.000												
4	0.309	0.291	0.235	1.000											
5	0.500	0.335	0.306	0.636	1.000										
6	0.143	0.293	0.283	0.381	0.300	1.000									
7	0.129	0.240	0.286	0.344	0.365	0.163	1.000								
8	0.452	0.425	0.339	0.445	0.467	0.181	0.450	1.000							
9	0.423	0.533	0.427	0.396	0.488	0.337	0.213	0.350	1.000						
10	0.232	0.332	0.475	0.325	0.381	0.316	0.440	0.233	0.331	1.000					
11	0.271	0.291	0.208	0.339	0.439	0.147	0.385	0.199	0.279	0.511	1.000				
12	0.229	0.280	0.308	0.375	0.409	0.179	0.566	0.460	0.355	0.471	0.268	1.000			
13	0.393	0.324	0.362	0.795	0.726	0.438	0.353	0.467	0.514	0.382	0.366	0.461	1.000		
14	0.471	0.374	0.247	0.505	0.495	0.269	0.491	0.575	0.396	0.408	0.322	0.462	0.628	1.000	
15	0.187	0.186	0.270	0.592	0.490	0.094	0.366	0.595	0.343	0.226	0.298	0.396	0.530	0.410	1.000

Items 10 and 11, which are concerned with personal influence, appear to be a group in themselves. Items 3 and 6--promotion and qualifications--are not correlated at the 0.45 level with other items and hence do not belong with any other particular group.

3. Factor Analysis

In view of the high intercorrelations among the stress variables and in an effort to consolidate items that appeared to be describing a common stress problem, the fifteen variables were factor analyzed using the principal components method followed by a five factor varimax rotation. (Table VII gives the communalities and the loadings for the new factors; Appendix C, the Pearson Product-Moment correlations).

A cut-off point of 0.55 was arbitrarily chosen for the purpose of describing the factors. The five factors were very similar to those groupings found in the correlation matrix (see Table VIII) and were:

Factor 1 - Work Overload[3] (items 4, 5, 13, and 15);
Factor 2 - Role Ambiguity (items 7, 8, and 12);
Factor 3 - Role Conflict (items 1, 2, and 9);
Factor 4 - Career Aspirations (items 3 and 6); and
Factor 5 - Personal Influence (items 10 and 11).

Individual factor scores for each teacher were calculated; the range in scores was from -3.000 to +3.478 (on a scale with mean 0 and variance 1). An examination of these scores indicates the assumption of a normal distribution is not unreasonable (Table IX). Classification according to fourteen groupings revealed that thirty teachers (approximately forty percent) scored high ($p < 0.065$, one-tailed) on at least one

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3. Names have been assigned arbitrarily on a best-fit basis. The literature assigning names to the factors obtained through factor analysis of the Michigan Survey Centre's job-tension index is very limited. Factor groupings do not duplicate either the Kahn et al (1964) or Rogers and Jobson (1974) studies.

TABLE VII

LOADINGS ON FIFTEEN STRESS VARIABLES**

FOLLOWING VARIMAX ROTATION TO FIVE FACTORS

Based on Replies to Questionnaires of

Teachers at Victoria Composite High School

December, 1973

Variable	Communality	Factor 1 Work Overload	Factor 2 Role Ambiguity	Factor 3 Role Conflict	Factor 4 Career Aspirations	Factor 5 Personal Influence
1	.756	.256	.048	.816*	-.079	.123
2	.708	.033	.148	.783*	.227	.145
3	.696	.054	.420	.022	.716*	.054
4	.823	.853*	.149	.119	.192	.148
5	.720	.691*	.166	.336	.147	.284
6	.656	.310	-.138	.132	.716*	.101
7	.710	.163	.735*	.025	.060	.373
8	.792	.385	.647*	.439	.036	-.177
9	.654	.266	.142	.562*	.495	.046
10	.774	.052	.360	.136	.435	.658*
11	.796	.257	.126	.173	-.010	.827*
12	.632	.203	.703*	.141	.181	.209
13	.851	.799*	.183	.226	.315	.170
14	.609	.443	.452	.416	.072	.175
15	.703	.668*	.502	.033	-.011	-.053

** Eigenvalue = 0.941

* Items selected are underlined.

TABLE VIII

VARIMAX ROTATED FACTORS

Based on Responses to Stress Items

Victoria Composite High School Teachers

December, 1973

Item No.	
	Factor 1 - Work Overload
4	Feel that you have too heavy a work load, one that you cannot possibly finish during an ordinary workday?
5	Think that you will not be able to satisfy the conflicting demands of various people around you?
13	Think that the amount of work you have to do may interfere with how well it is done?
15	Feel that your job interferes with your family life or out-of-school interests?
	Factor 2 - Role Ambiguity
7	Not know what your supervisor thinks of you, how he evaluates your performance?
8	Find yourself unable to get information needed to carry out your job?
12	Not know just what the people you work with expect of you?
	Factor 3 - Role Conflict
1	Feel that you have too little authority to carry out your responsibilities?
2	Feel unclear just what the scope and responsibilities of your job are?
9	Worry about decisions that affect the lives of people that you know?
	Factor 4 - Career Aspirations
3	Not know what opportunities for advancement or promotion exist for you?
6	Feel that you are not fully qualified to handle your job?
	Factor 5 - Personal Influence
10	Feel that you may not be liked and accepted by people at work?
11	Feel unable to influence your immediate supervisor's decisions and actions that affect you?

TABLE IX

FREQUENCY DISTRIBUTIONS

FIVE STRESS FACTORS*#

Victoria Composite High School Teachers

December, 1973

Range	FACTOR 1	2	3	4	5
Above 3.00***	0	0	0	1#	0
2.51 to 3.00**	0	1	1	0	0
2.00 to 2.50*	2	4	0	1	2
1.51 to 2.00x	6	0	4	4	4
1.01 to 1.50	4	4	7	6	7
0.51 to 1.00	8	10	14	10	9
.00 to 0.50	19	19	12	13	11
-0.01 to -0.50	14	13	15	18	21
-0.51 to -1.00	9	17	13	11	12
-1.01 to -1.50	10	3	6	10	6
-1.51 to -2.00x	3	4	3	1	2
-2.01 to -2.50*	1	1	0	1	1
-2.50 to -3.00**	0	0	1	0	1
Below -3.00***	0	0	0	0	0

*#Mean approximately 0; standard deviation is 1. One teacher is omitted because a number of these items were omitted.

xMinimum significance level is .065 (two-tailed).

*Minimum significance level is .022

**Minimum significance level is .006

***Minimum significance is .001

#Highest stress score. Value is 3.478. Probability of occurrence about .00025.

of the five stress factors. It was also found that on work overload, eight teachers had loadings above 1.50 ($p < 0.065$), four had loadings below - 1.50; on role ambiguity, the frequency above and below was five and five; on role conflict, five and four; on career aspirations, six and two; and on personal influence, six and four.

4. Summary

Findings of section A and B of this chapter include:

(1) Teachers answering the questionnaire are demographically representative of the total VCHS population;

(2) Comparison of the means of each of the stress items to the mean for all fifteen variables shows that teachers are significantly high on three items:

item 4: they feel they have too heavy a work load;

item 9: they worry about decisions that affect others;

item 13: they feel that the amount of work they do interferes with how well it is done;

(3) Very few teachers experience high stress because of:

item 6: a feeling that they are not qualified for the job;

item 10: a feeling that they may not be liked and accepted by people at work; and because of

item 12: uncertainty as to what people expect of them.

(4) Actual frequency of answers in specific categories are sig-significantly different from expected frequencies (when the χ^2 goodness of fit test is used to make comparisons) on three additional items:

item 3: More teachers than expected 'never' experience a feeling of anxiety because they do not know what opportunities for promotion exist. At the same time, more teachers than expected are often or always troubled because of this.

On both item 14--teachers feel they have to do things against their better judgment--and item 1--they have too little responsibility to carry out their duties--a disproportionate number of teachers felt that they 'sometimes' faced these situations. In other words, answers to this question were more concentrated in the middle category.

(5) Looking at stress item correlations, five sets of items appear to belong together, namely:

4, 5, 13, 14, and 15
1, 2, 5, 9
7, 8, 12, 13, 14
10, 11, and
3, 6.

(6) Factor analysis confirmed this grouping (see Figure 5) with

items 4, 5, 13, and 15 defining a work overload dimension;

items 7, 8, and 12--a role ambiguity dimension;

items 1, 2, and 9--role conflict;

items 3 and 6--a career aspirations factor; and

items 10 and 11--lack of personal influence.

This is illustrated in figure 5, next page.

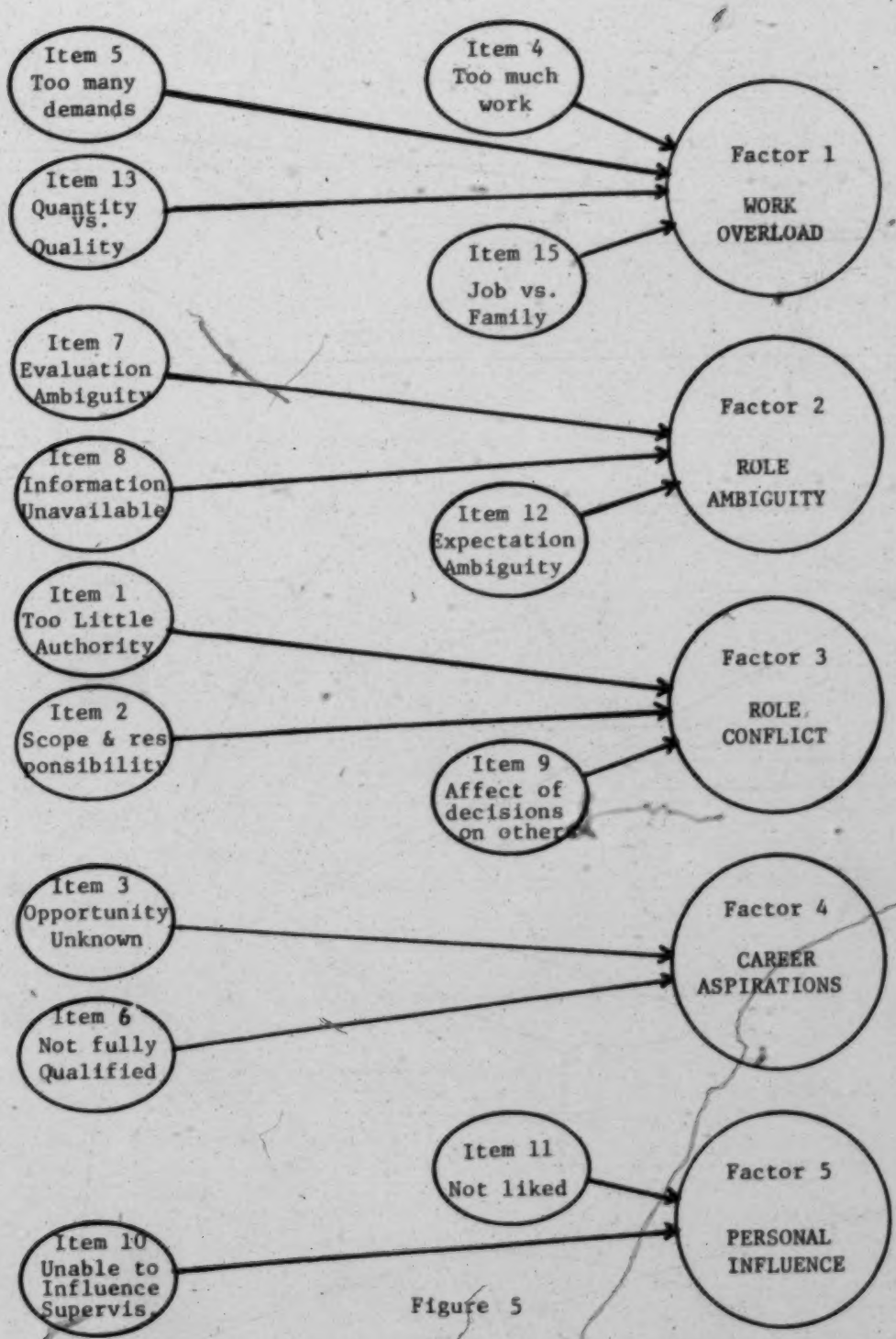

Figure 5

Stress Item Components of Stress Factors

C. STRESS AND DEMOGRAPHICS

Classification of individuals into groups was carried out for fifteen of the eighteen categorical and nominal demographic variables. The three omitted items:

9. Recognized education, duplicated question 8;

12. Hours taught, duplicated question 11; and

16. Health was dropped by error from the data. This was not discovered until a considerable number of the computations were completed. Also, a new category 'discrepancy between present position and position desired' was added.[4]

Following the classification into groups, each demographic variable was related to stress by using discriminant analysis and analysis of variance.

1. Discriminant Analysis

Discriminant analysis was used to determine linear combinations of stress items or factors which best distinguish among individuals with respect to a demographic variable.

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4. Coding system for this question:

Present Position	Desired Position	Code
School Administration	Central Office	1
	School Administration	0
	Curricular Associate	-1
	Teacher	-2
Curricular Associate	Central Office	2
	School Administration	1
	Curricular Association	0
	Teacher	-1
Teacher	Central Office	3
	School Administration	2
	Curricular Associate	1
	Teacher	0

TABLE X

DISCRIMINANT ANALYSIS

PROBABILITY OF DISTRIBUTION RELATING STRESS ITEMS AND DEMOGRAPHIC VARIABLES OCCURRING BY CHANCE

As reported by VCHS Teachers

December, 1973

Demographic Variables	ANALYSIS OF VARIANCE FOR ITEMS															All Fifteen
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
Age	.193	.027*	.190	.222	.162	.305	.062*	.036*	.684	.372	.998	.071*	.041*	.199	.032*	.135
Marital Status	.137	.462	.689	.667	.505	.396	.282	.589	.599	.958	.536	.698	.857	.188	.085*	.625
Sex	.622	.103	.834	.695	.599	.432	.209	.764	.640	.219	.286	.511	.951	.902	.906	.818
Actual Education	.978	.678	.661	.768	.875	.767	.953	.911	.660	.617	.882	.767	.726	.629	.200	.947
Position	.980	.825	.360	.209	.769	.522	.466	.528	.959	.735	.713	.666	.608	.589	.811	.778
Subject Area	.569	.937	.422	.000*	.038*	.539	.300	.582	.709	.677	.391	.678	.055*	.462	.019*	.330
Country Educated	.729	.608	.128	.678	.777	.186	.266	.533	.901	.352	.273	.364	.847	.990	.633	.979
ATA Participation	.965	.558	.777	.700	.251	.447	.826	.179	.434	.008*	.060*	.772	.659	.770	.030*	.178
Position Desired	.562	.815	.062*	.688	.431	.214	.793	.614	.834	.287	.456	.619	.702	.936	.678	.920
Position Discrep.	.452	.763	.008*	.778	.685	.924	.712	.332	.572	.449	.630	.435	.406	.280	.606	.579
Years Experience	.276	.427	.632	.228	.209	.944	.931	.239	.647	.719	.420	.233	.430	.844	.870	.312
Years - VCHS	.254	.744	.168	.075*	.021*	.621	.471	.677	.564	.215	.108	.703	.251	.689	.067*	.029*
Concern	.823	.211	.026*	.261	.252	.028*	.612	.141	.023*	.371	.644	.153	.302	.291	.087*	.047*
Order of Birth	.594	.881	.220	.685	.583	.890	.496	.549	.357	.110	.837	.575	.400	.807	.373	.819
University Educ.	.764	.565	.827	.348	.733	.403	.375	.725	.554	.865	.404	.933	.926	.416	.396	.429
Other Training	.902	.455	.815	.804	.505	.798	.896	.154	.539	.101	.104	.876	.708	.763	.021*	.105

TABLE XI

DISCRIMINANT ANALYSIS

PROBABILITY OF DISTRIBUTION
RELATING DEMOGRAPHIC VARIABLES AND
FIVE STRESS FACTORS
OCCURRING BY CHANCE

Based on information reported by
Teachers at Victoria Composite High School

December, 1973

Demographic Variable	ANALYSIS OF VARIANCE FOR FACTOR 1	2	3	4	5	Overall Distribution
Age	.366	.068*	.864	.951	.672	.619
Marital Status	.647	.989	.878	.852	.687	.995
Sex	.532	.088*	.615	.570	.181	.347
Years of Actual Education	.647	.989	.878	.852	.687	.995
Position in the School	.455	.594	.809	.075*	.756	.560
Subject Area Taught	.002*	.605	.948	.601	.692	.128
Country in Which Educated	.161	.911	.652	.063*	.593	.362
Participation in ATA Affairs	.629	.040*	.568	.958	.627	.503
Position Desired	.728	.590	.659	.204	.207	.526
Discrepancy Between Present Position and Desired Posit.	.798	.350	.374	.188	.253	.354
No. of Years of Teaching Experience	.007*	.922	.641	.935	.748	.454
No. of Years Teaching at Victoria Composite High	.131	.314	.370	.780	.110	.192
Concern in Teaching	.172	.040*	.453	.094*	.775	.068*
Order of Birth	.186	.253	.343	.448	.555	.318
Years Since Previous University Education	.192	.750	.939	.487	.431	.702
No. of Years Since Training at an Institution Other Than the University	.311	.814	.808	.184	.738	.682

Only three significant functions were obtained (Table X and Table XI). Specifically, functions of the fifteen stress items were found to discriminate on 'teaching experience at VCHS' (Table XII), and 'concern in teaching' (Table XIII). In the case of 'concern in teaching', a function of the five stress factors was also found to be discriminatory (Table XIV).

Discriminant Function 1. The function which best discriminates among individuals with respect to teaching experience at VCHS

$$D = 0.618V_1 - 1.008V_2 - 0.287V_3 + 2.340V_4 + 2.201V_5 - 2.860V_6 - 0.332V_7 + 0.697V_8 + 0.785V_9 + 2.973V_{10} - 0.052V_{11} + 0.005V_{12} + 1.119V_{13} - 5.229V_{14} + 0.347V_{15}$$

shows that three items--4, 5, and 10--increase the discriminant value; and two--6 and 14--decrease it. Teachers with the highest scores should experience relatively high stress due primarily to:

too heavy a work load;
not being able to satisfy conflicting demands;
a feeling that they will not be liked and accepted by colleagues.

The smaller the stress scores on items

6 feel not qualified to do the job; and
14 have to do things against their better judgement

the higher should be the discriminant score. Conversely teachers with low discriminant values should score either relatively low on all five of the above stress items, or relatively high on item 6, and especially 14, and low on items 4, 5, and 10.

Table XII shows that the average teacher with three to five years of teaching experience at VCHS does have the highest average stress on items 4, 5, and 10; the lowest mean on item 6. No great variation in

average stress score exists for any of the groups on item 14. As a consequence of the above high and low scores, those teachers with three to five years of teaching experience at VCHS do have the highest discriminant score, 22.32. Furthermore, this value drops successively for each of the two more experienced groups. Teachers with the lowest discriminant scores are those with one to two years experience. The average teacher in this group has the lowest mean stress (when compared to the other three groups) on items 4, 5, 10, and relatively high mean stress on items 14 and 6. Consequently, the group to which he belongs does have the lowest discriminant score, 14.41. It would therefore appear that rather than a precise discriminatory effect, discriminant analysis on the basis of teaching experience appears to identify an inverted 'U' effect--with the least and most experienced teachers having lowest scores and those with three to five years of experience, the highest scores.[5]

It would also seem that the first discriminant function distinguishes teachers on their perseption of their ability to 'fit' within the system, i.e. their coping ability--beginning teachers worrying about their qualifications, and about doing things contrary to their best judgement. As the teacher begins to 'fit', he acquires a heavy work load, conflicting demands are made on him, he worries about his relationship with his colleagues. As he gains more seniority, these pressures tend to decrease, and he becomes confident of his ability to cope with the system.

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5. The 'U' and inverted 'U' effect has been discussed by Indik, Seashore, and Slesinger (1964).

TABLE XII

DISCRIMINANT ANALYSIS

GROUP MEANS AND STANDARD DEVIATIONS**

TEACHING EXPERIENCE AT VCHS AND FIFTEEN STRESS VARIABLES

As Reported by Teachers at VCHS

December, 1973

No. of Years-VCHS	No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Disc. Value*
One - two years	21	2.524	2.381	2.333	2.476	2.286	1.905	2.571	2.381	2.714	1.857	2.048	2.048	2.571	2.619	1.952	14.41
		0.957	0.785	1.247	1.332	0.933	0.811	1.050	1.090	0.983	0.774	0.844	0.898	1.094	1.233	0.950	
Three-five years	16	2.563	2.313	3.000	3.438	3.250	1.688	2.938	2.563	3.125	2.375	2.500	2.375	3.250	2.438	2.375	22.12
		0.788	0.926	1.275	1.273	1.146	0.583	1.029	0.933	0.696	0.857	1.061	0.781	1.250	0.704	1.111	
Six - ten years	30	2.900	2.333	2.300	3.133	2.767	1.767	2.400	2.333	2.833	2.200	2.700	2.200	3.000	2.300	2.200	19.53
		0.870	0.869	1.295	1.118	0.883	0.920	1.172	0.745	0.778	0.702	0.971	0.872	1.065	0.862	1.108	
More than 10 years	9	2.333	2.000	1.889	3.333	2.333	2.111	2.444	2.111	2.778	2.111	2.778	2.111	2.667	2.444	2.667	17.48
		0.661	0.943	0.994	0.471	0.817	0.875	0.956	0.567	1.133	0.567	1.030	0.567	0.471	0.685	0.934	
Total population		2.658	2.303	2.408	3.039	2.684	1.829	2.566	2.368	2.855	2.132	2.487	2.184	2.895	2.434	2.316	
		0.882	0.874	1.289	1.219	1.016	0.833	1.104	0.886	0.884	0.767	1.006	0.838	1.048	0.908	1.103	

*Discriminant Value = 0.618 variable 1 - 1.008 variable 2 - 0.287 variable 3 + 2.340 variable 4 + 2.201 variable 5 - 2.860 variable 6 - 0.332 variable 7 + 0.697 variable 8 + 0.785 variable 9 + 2.973 variable 10 - 0.052 variable 11 + 0.005 variable 12 + 1.119 variable 13 - 5.229 variable 14 + 0.347 variable 15.

**Means for each group are given in the first row; standard deviations in the second row.

Discriminant Function 2. The second significant discriminant function (Table XIII)

$$D = 0.499V_1 + 0.882V_2 - 1.787V_3 + 0.945V_4 - 2.121V_5 + 3.237V_6 + 0.535V_7 - 0.843V_8 + 3.912V_9 + 2.077V_{10} - 0.577V_{11} - 2.933V_{12} - 2.463V_{13} - 0.426V_{14} + 0.890V_{15}$$

separates the groups with respect to 'concern in teaching'. In this function, variables (also referred to as stress items)

6 teachers feel they are not qualified for the job;
9 they worry about decisions that affect the lives of other people;
10 and about being liked and accepted by others

increase the value of the discriminant function and items

3 they do not know what opportunities for advancement exist;
5 are not able to satisfy conflicting demands;
12 do not know what people expect of them; and
13 feel that the amount of work they have to do interferes with how well it is done

decrease it (more so than other variables).

Table XIII shows that the teacher in the group with the highest discriminant score (concerned with methodology), has mean scores on these seven items ranging from a low of 1.4 (item 6) to a rather mediocre high of 2.667 (item 5). In other words, relatively low scores on all seven items. This is reflected in the low value of the highest discriminant score, 1.00.

The average teacher belonging to the group with the lowest discriminant value, i.e. in the group interested in changing the behaviour patterns or life styles of students, has the highest mean (of any of the four groups) on both items 5 and 9. Furthermore, he also has a relatively high mean on items 3, 6, 10, and 13 and the lowest average of any of the groups on item 12.

TABLE XIII

DISCRIMINANT ANALYSIS

GROUP MEANS AND STANDARD DEVIATIONS**

CONCERN IN TEACHING AND FIFTEEN STRESS VARIABLES

As Reported by Teachers at VCHS

December, 1973

Concern	No.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Disc. Value*
Methodology	15	2.600	2.000	1,800	2.600	2.667	1.400	2.467	2.133	2.333	1.800	2.267	2.200	2.600	2.133	1.933	1.00
		1.254	0.894	0.980	1.356	1.193	0.712	1.204	0.806	0.943	0.748	1.062	0.909	1.200	0.806	1.062	
Behavior Pattern	32	2.750	2.313	2.813	3.094	2.906	1.938	2.500	2.438	3.094	2.219	2.625	2.094	3.063	2.500	2.375	-7.64
		0.866	0.808	1.379	1.377	1.100	0.827	1.090	0.933	0.765	0.780	1.023	0.723	1.144	0.829	1.083	
Subject Matter	25	2.600	2.560	2.080	3.120	2.360	2.040	2.520	2.320	2.960	2.160	2.360	2.120	2.680	2.360	2.320	-3.71
		0.566	0.852	1.055	0.816	0.686	0.824	1.025	0.676	0.720	0.731	0.889	0.765	0.835	0.889	0.968	
Self Improvement	5	2.400	2.000	3.000	3.800	2.800	1.200	3.200	3.200	2.400	2.200	2.600	3.000	3.400	3.000	3.400	-4.82
		0.800	0.894	1.414	0.748	0.748	0.400	1.166	1.327	1.200	0.748	1.200	1.095	1.356	1.414	1.356	
Total Population	77	2.649	2.312	2.390	3.052	2.675	1.818	2.545	2.390	2.857	2.117	2.468	2.182	2.870	2.416	2.338	
		0.879	0.872	1.291	1.216	1.012	0.833	1.111	0.900	0.879	0.772	1.014	0.833	1.109	0.917	1.112	

*Discriminant Value = 0.499 variable 1 + 0.882 variable 2 - 1.787 variable 3 + 0.945 variable 4 - 2.121 variable 5 + 3.237 variable 6 + 0.535 variable 7 - 0.843 variable 8 + 3.912 variable 9 + 2.077 variable 10 - 0.577 variable 11 - 2.933 variable 12 - 2.463 variable 13 - 0.426 variable 14 + 0.890 variable 15.

**Means for each group are given in the top row; standard deviations in the second row.

Speculation that this discriminant function distinguishes between teachers on an involvement or a self-image dimension might be in order. The teacher in the group with the high discriminant score feels well qualified, is below the norm in concern about making decisions that affect others, about being liked, about promotion, about satisfying conflicting demands, or quantity of work. It would seem that he is either extremely self-centered or secure, i.e. that he has a high self-image of himself or that he does not interact with colleagues. In that his chief concern is methodology, other teachers would probably see this person as 'without commitment'. On the other hand, the teacher who worries about being able to satisfy conflicting demands and about his decisions affecting others but has low concern for what others expect of him, might well have a low self-image. In that his aim in teaching is to change the behaviour of others, colleagues might view him as an 'meddler'--a not too flattering synonym for one who might be conscientiously sincere and committed.[6]

Discriminant Function 3. Concern in teaching is also measured by a significant discriminant function of five factors, i.e.

$$D = 1.318F_1 + 5.848F_2 - 3.487F_3 - 4.376F_4 - 1.653F_5.$$

According to this function, a high discriminant score results when factor 2 (role ambiguity) is high and positive and factors 3 (role conflict) and /or factor 4 (career aspirations) are not positive; or when factor 3 (role conflict) and/or factor 4 (career aspirations) are large negative

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6. In Appendix E, F, G are diagrams showing the demographic, personality, and structural variables that are significantly correlated with the stress items important to discriminant analysis. The second one appears in Appendix F; the reader is invited to draw his own conclusions.

TABLE XIV

DISCRIMINANT ANALYSIS

SUMMARY OF GROUP MEANS AND STANDARD DEVIATIONS

CONCERN IN TEACHING AND FIVE STRESS FACTORS

As Reported by Teachers at VCHS

December, 1973

Concern	No. of Teachers in Group	Factor 1		Factor 2		Factor 3		Factor 4		Factor 5		Discriminant Value*
		Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	
Methodology	15	-0.360	1.010	0.005	0.849	-0.103	1.266	-0.467	1.011	-0.134	0.791	2.18
Change in Behaviour Patterns of Students	32	0.188	1.143	-0.121	0.898	0.041	0.913	0.203	1.047	0.135	0.965	-1.71
Subject Content	25	-0.135	0.814	-0.125	0.760	0.137	0.861	0.127	1.110	0.049	0.693	-1.87
Self-Improvement	5	0.555	0.747	1.206	1.709	-0.635	1.353	-0.534	0.563	-0.218	1.081	12.69

*Discriminant Value = 1.318 x factor 1 + 5.848 x factor 2 - 3.487 x factor 3 - 4.376 x factor 4 - 1.653 x factor 5

values and factor 2 is not negative. Conversely, a low discriminant score results when factor 2 (role ambiguity) is a large negative score and factors 3 (role conflict) and/or factor 4 (career aspirations) are not negative; or when factor 3 and/or factor 4 are large positive scores and factor 2 is not positive.

In this case, the highest discriminant score, 12.69, is attributable to the teacher who is interested in his own self-improvement. This teacher is high on role ambiguity, and low on both role conflict and career aspirations, i.e. he experiences stress more than any other group when he is faced with an ambiguous situation and less than other groups because of role conflict, or because of his personal aspirations.

The teacher with the lowest discriminant score is in either of two groups: interested in changing life styles or behaviour patterns of students (-1.71) or in teaching a subject and making certain that students understand the content (-1.87). In both cases, the average teacher has very low means on role ambiguity and relatively small positive scores on role conflict and career aspirations.

The third discriminant function, therefore, appears to distinguish teachers on a role ambiguity vs. role conflict - career aspirations dimension.

The three discriminant functions distinguish teachers on perception of belonging to the system, either an 'involvement' or a 'self-image' dimension, and on a role ambiguity vs. role conflict-career aspiration dimension.

2. Analysis of Variance

If the vectors of sample means for all fifteen stress items computed for each group are significantly different then there exists a discriminant function which best discriminates among the groups. It is possible however for the sample means on a particular item to be significantly different even if the vector of fifteen sample means is not. In order to determine which items yielded sample means which differed significantly by groups, analysis of variance was used, and those demographic groups determined to have these significantly different means on specific stress items and factors, are:

Age--items 2, 7, 8, 12, 13, 15, and factor 2;
Marital status--item 15;
Sex--factor 2;
Position--factor 4;

Subject area--items 4, 5, 13, 15, and factor 1;
Country where elementary education was taken--factors 1 and 4;
Position desired--item 3;
Position discrepancy--item 3;
Participation in ATA activities--item 10, 11, 15, and factor 2;

Years of teaching experience--factor 1;
Years of teaching experience at VCHS--items 4, 5, and 15;
Concern in teaching--items 3, 6, 9, 15, and factors 2 and 4;
No. of years since other types of training have been completed--15.

None of the group means in the remaining demographic variables--actual education, order of birth, and number of years since last University course was taken--were significantly different.

Age. Analysis of variance on the fifteen stress items according to age grouping (Table XV) shows that stress levels attributable to the fact that teachers feel unclear about the scope and responsibilities of their duties (item 2) and do not know how their supervisor evaluates

their performance (item 7) decrease until teachers reach the 41-to-50 year age level and remain steady or rise slightly for those who are over fifty.

Stress caused by an inability to get information needed to carry out the job (item 8) and because the amount of work interferes with how well it is done (item 13) and with family and other outside activities (item 15) decreases as age increases. Only on item 12--not knowing what others expect of the teacher--is this pattern not followed; the highest stress is in the 31-to-40-year group and the lowest with the over-50 group.

Stress because of role ambiguity is experienced most severely by teachers who are in the 31 - 40 age bracket. Differences of means between these groups show that role ambiguity is not a stress producing agent for those who are over 50.

Marital Status. Results of analysis of variance show that single, divorced, and separated teachers experience more stress because their work interferes with their family and with outside activities than do married teachers.[7]

Sex. A significant difference also exists between males and females on factor 2, role ambiguity.[8] The four component items:

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7. Means and standard deviations for item 15: population, 2.392, 1.089; single, 2.909, 1.083; married, 2.232, 0.982; other, 2.856, 1.457.

8. Means and standard deviations for factor 2: population, 0, 1; males, 0.146, 0.835; females, 0.273, 1.221.

TABLE XV

ANALYSIS OF VARIANCE*

ON STRESS ITEMS AND FACTORS DETERMINED AS SIGNIFICANT

GROUPING ON BASIS OF AGE

As Reported by Teachers at Victoria Composite High School

December, 1973

Age	No.	2	7	8	12	13	15	Factor 2
Under 30 years	15	2.867	3.000	2.733	2.267	3.533	2.867	-0.034
		0.718	0.817	0.929	0.680	0.957	1.024	0.954
31 - 40 years	28	2.321	2.964	2.643	2.571	3.000	2.464	0.297
		0.710	1.349	0.854	0.904	0.926	1.117	1.122
41 - 50 years	18	2.000	2.278	2.389	2.167	2.778	2.444	0.001
		0.882	0.803	0.826	0.601	1.272	1.066	-0.842
Over 50 years	15	2.267	2.333	1.933	1.933	2.467	1.733	-0.556
		0.854	0.699	0.573	0.680	0.860	0.680	0.665
Total Sample	76	2.711	2.684	2.461	2.289	2.947	2.394	0
		0.836	1.079	0.865	0.792	1.062	1.077	1.000

*Means are given in the top row; standard deviations in the second.

Not know how your supervisor evaluates your performance;
Unable to get information needed to carry out your job;
Not know what people you work with expect of you;
Feel that the job interferes with family or out-of-school activities;

suggest that stress results from a desire to please other people. If this is so, it is possible that women teachers have increased role ambiguity stress levels induced by cultural biases, i.e. they carry over to their jobs the inculturation and expections of society.

Position. Stress precipitated by career aspirations is significantly greater for the total teaching population than for administrators, significantly greater for curricular associates than that of either administrators or the total teaching population at VCHS.[9]

The role of the curricular associate might perhaps be comparable to that of a foreman (Whyte, 1969) or to a scientist in industry (Kornhauser, 1963) serving two masters. In being faced with requirements or demands from the administrative staff and hesitancy in compliance from his departmental colleagues (or vice-versa), the curricular associate envisions that more senior administrative positions might free him from the 'man-in-the-middle' dilemma--or at least provide him with greater financial compensation for coping with it.

Subject. Analysis of variance of the five factors grouped according to three main subject areas taught (Table XVI) shows that mathematics-science teachers have the lowest stress which is attributable to work overload; teachers in the humanities area, the most. Furthermore, analysis of variance on the fifteen items confirms these findings. The perceived stress of teachers who teach in the humanities that is precipitated by too heavy a work load (item 4), a feeling that the amount of work interferes with how well it is done (item 13), and with family and out of school interests (item 15), is significantly higher than that of teachers in mathematics-science. Stress of teachers in the humanities attributable to a feeling that they will not be able to satisfy the

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9. Means and standard deviations for this factor are: population, 0, 1; administrator, -0.823, 0.556; curricular associate, 0.358, 1.303; teacher or counsellor, -0,016, 0.895.

TABLE XVI

ANALYSIS OF VARIANCE*

ON STRESS ITEMS AND FACTORS DETERMINED AS SIGNIFICANT

GROUPING ON BASIS OF SUBJECT AREA TAUGHT

As Reported by Teachers at Victoria Composite High School

December, 1973

Subject	No.	4	5	13	15	Factor 1
Mathematics-Science	20	2.450	2.500	2.500	2.000	-0.451
		1.117	0.975	0.975	1.183	0.952
Humanities	27	3.741	3.074	3.259	2.593	0.514
		1.142	1.051	1.109	0.818	0.837
Vocational Education	30	2.833	2.433	2.767	2.133	-0.162
		1.035	0.883	1.086	1.147	0.965
All Teachers in Sample	77	3.052	2.675	2.870	2.338	0
		1.216	1.012	1.109	1.112	1.000

*Means are given in the top row; standard deviations on the second row.

conflicting demands of various people around them (item 5) is significantly higher than that of either the mathematics-science or vocational area.

Country. There was no significant difference from the population mean for any of the fifteen items when compared on the basis of groupings obtained by country in which the teacher was educated. Differences of means, however, between groups for factor one,[10] showed that the

10. Means and standard deviations for work overload: population, 0, 1; Alberta, -0.167, 0.908; another province, 0.446, 1.175; United States, 0.016, 0.537; Europe, 0.352, 1.039. Means and standard deviations for career aspirations: Alberta, -0.015, 0.975; another province, 0.458, 1.105; United States, -0.678, 0.487; Europe, -0.676, 0.222.

stress experienced on work overload of native Albertan teachers was significantly less than that of teachers educated in another province or those educated in Europe. Additionally, those educated in other Canadian provinces had significantly more stress because of career aspirations than those educated in Alberta. Teachers educated in the United States and Europe had the least stress precipitated by this factor.

ATA. Analysis of variance of the fifteen stress variables grouped according to participation in Alberta Teachers' Association activities (Table XVII) revealed that medium participators had significantly higher levels on items 10 and 11

Feel not liked and accepted by people at work;
Feel unable to influence the supervisor's decisions and actions;

and that high participators (executive) had significantly low stress levels on these same items. When medium participators and non-participators were compared on item 15--feel that the job interferes with family life or out-of-school activiities--the difference in stress was significant at the 0.02 level with non-participators scoring the higher levels. (This could be attributable to actual conditions or to a difference in priorities between the two groups).

On the five factors, however, executive (high) participators were significantly high ($p < 0.05$) on factor 2, role ambiguity.

It would seem that while teachers on ATA executives and committees experience high role ambiguity, those at a counsellor, etc. level find lack of personal influence a stress factor. Teachers who do not participate in ATA activities find that the level of stress precipitated because their job interferes with their family life or out-of-school activities, is significantly higher. (Whether this reflects an actual

TABLE XVII

ANALYSIS OF VARIANCE*

ON STRESS ITEMS AND FACTORS DETERMINED AS SIGNIFICANT

GROUPING ON BASIS OF ATA PARTICIPATION

As Reported by Teachers at Victoria Composite High School

December, 1973

Participation Level	No.	10	11	15	Factor 2
High Participators	8	1.500	1.750	1.875	0.761
		0.500	0.433	0.927	0.905
Medium Participators	15	2.533	2.800	1.800	0.124
		0.500	1.046	0.833	1.260
Non-Participators	54	2.093	2.481	2.556	-0.164
		0.800	1.014	1.133	0.852
All Teachers in Sample	77	2.117	2.468	2.338	0
		0.772	1.014	1.112	1.000

*Means for each group are given in the top row; standard deviations in the second row.

heavy work load on the part of the teachers, or a dedication of those involved in ATA activities to professionalism, was not determined by this study).

Position Desired. The five teachers who desired to be assistant principals had a significantly higher stress mean ($p < 0.075$) on item 3--they did not know what opportunities for advancement, or promotion existed for them.[11] For persons now designated only as teachers, this

11. Means and standard deviations for item 3: population, 3.039, 1.219; teacher or counsellor, 2.075, 1.191; curricular associate, 2.182, 0.575; assistant principal, 3.400, 1.020; principal, 2.625, 1.317; and member of central office staff, 3.000, 1.617.

would constitute a two-level promotion. The stress level of teachers who wanted a three-level promotion, i.e. a central office position, was even higher ($p < 0.05$) on this item.[12]

Experience. Work overload is a precipitator of high stress for teachers with some experience, i.e. those who have taught from three to five years and also for those teachers with eleven to twenty years experience.[13] Comparative stress levels precipitated by work overload are close to the mean for those with six to ten years of experience and those with more than twenty years, and are significantly low for those with only one or two years of experience.

Experience - VCHS. Furthermore, the group of teachers that experience the greatest amount of organizational stress are those who have been at the school from three to five years. These teachers feel that they:

> have too heavy a work load;
> will be unable to satisfy the conflicting demands of others; and
> that the job interferes with family or out-of-school activities.[14]

---

12. Means and standard deviations for item 3 and discrepancy between present position and position desired: population, 2.408, 1.289; zero levels, 2.042, 1.117; one level, 2.444, 0.831; two levels, 3.091, 1.379; three levels, 3.333, 1.291.

13. Means and standard deviations for work overload: population, 0.[illegible]1; one to two years, -0.878, 0.783; three to five years, 0.537, 1.153; six to ten years, -0.014, 1.001; eleven to twenty years, 0.401, 0.905; more than twenty years, -0.109, 0.574.

14. Means and standard deviations are:

No. of years	Item 4		Item 5		Item 15	
Entire sample	3.039	1.219	2.684	1.016	2.316	1.103
One - two years	2.476	1.332	2.286	0.933	1.952	0.950
Three-five years	3.438	1.273	3.250	1.146	2.875	1.111
Six - ten years	3.133	1.118	2.767	0.883	2.200	1.108
More than 10 years	3.333	0.471	2.333	0.817	2.556	0.956

TABLE XVIII

ANALYSIS OF VARIANCE*

ON STRESS ITEMS AND FACTORS DETERMINED AS SIGNIFICANT

GROUPING ON BASIS OF CONCERN IN TEACHING

As Reported by Teachers at Victoria Composite High School

December, 1973

Concern	No.	3	6	9	15	Factor 2	Factor 4
Methodology	15	1.800	1.400	2.333	1.933	0.005	-0.467
		0.980	0.712	0.943	1.062	0.849	1.011
Behaviour Pattern	32	2.813	1.938	3.094	2.375	-0.121	0.203
		1.379	0.827	0.765	1.083	0.898	1.047
Subject Matter	25	2.080	2.040	2.960	2.320	-0.125	0.127
		1.055	0.824	0.720	0.968	0.760	1.110
Self-Improvement	5	3.000	1.200	2.400	3.400	1.206	-0.534
		1.414	0.400	1.200	1.356	1.709	0.563
Total Sample	77	2.390	1.818	2.857	2.338	0	0
		1.291	0.833	0.879	1.112	1.000	1.000

*Means are given in the top row; standard deviations in the second.

It would appear therefore that stress for this particular group is precipitated, as previously determined, by work overload.

Concern. The comparison of the means of the fifteen stress items on the basis of concern in teaching shows there are four items where a significant difference is indicated (Table XVIII):

Item 3: Opportunities for advancement are not known;
Item 6: Feel that not fully qualified to handle the job;
Item 9: Worry about decisions that affect others; and
Item 15: The job interferes with family and out-of-school activities.

Teachers concerned with self-improvement have significantly higher levels because they do not know the opportunities for advancement and because their job interferes with family and out-of-school activities. These same teachers have significantly low stress on the item dealing with qualifications: they do feel they are well qualified for the job.

Those teachers concerned with methodology generally have the lowest stress levels on three of the above items; that concerning qualifications is also below the population average.

On the other hand, teachers concerned with changing life styles or behaviour patterns experience high stress because they worry that the decisions they make will adversely affect others.

These findings relate to those previously ascertained using the second of the discriminant functions--teachers appeared to experience stress differently depending on their reason for remaining within the teaching environment. Teachers concerned with methodology appear to be aloof from the teaching environment; those concerned with changing behaviour are apprehensive because their involvement might adversely affect others.

Other Training. Organizational stress due to a feeling that the job interferes with family life and outside activity varies significantly when compared on the basis of the number of years since last training at an institution other than a university (i.e. in a skill, technical, practical, hobby, or inservice area). It is lowest for the group that is enrolled in some program currently and highest in the group that has had no 'other' training for more than ten years. Teachers

who were enrolled in a course last year also have high stress levels on item 15--their job interferes with family and out-of-school activities.[15]

15. Means and standard deviations for item 15: population: 2.316, 1.470; this year: 1.875, 0.927; last year: 3.077, 0.828; two to five years: 2.100, 1.261; six to ten years: 2.375, 0.696; more than ten years: 3.200, 1.470.

4. Summary

The results of discriminant analysis indicated the existence of three discriminating functions, i.e.

(1) That the number of years that a teacher has taught at VCHS affects his perception of his ability to cope with the system;

(2) The second discriminant function distinguishes among teachers on one of two dimensions: either a self-image or an involvement dimension;

(3) The third discriminant function distinguishes among teachers on a role ambiguity vs. role conflict and career aspirations dimension;

Analysis of variance further determined specific stress characteristics of particular groups, namely:

(1) Stress precipitated by structural characteristics of the school and by quantity of work tends to decrease as age increases (Table XV and figures 6 and 7);

(2) Work does not interfere with family and out-of-school activities to the same extent for the average married teacher as it does for the average teacher in other marital categories (figure 6);

(3) The average woman has increased stress that is precipitated by role ambiguity. She appears to carry through cultural expectations and feels that she should please other people (figure 7);

(4) For the average curricular associate, stress is precipitated by unfulfilled career aspirations (figure 9);

(5) For teachers in the humanities, high stress levels are related to work overload (figure 6);

(6) Those teachers born in other Canadian provinces experience high stress levels because they have high career expectations (figure 9); and feel they have more work than they can comfortably perform (figure 6). Some portion of high stress levels experienced by Europeans is precipitated by work overload (figure 6);

(7) For members of Alberta Teachers' Association executives or its councils, high stress levels are, at least partly, precipitated by role ambiguity (figure 7); for those who are counsellors, or otherwise not as involved at a senior level, lack of personal influence is a precipitator. Those teachers who do not become involved in ATA activities have high stress levels because teaching interferes with their family life or out of school activities (figure 6);

(8) Teachers with three to five years experience average high scores on work overload stress (figure 6);

(9) The higher the promotion that a VCHS teacher desires, compared to his present position, the higher will be the stress attributable to the fact that he does not know the opportunities for advancement that are available (figure 9);

(10) Concern in teaching also determines the type and magnitude of stress that will be experienced. Those teachers interested in self-improvement have high role ambiguity and career aspiration stress (figure 7 and 9);

(11) The less a teacher is involved in extra training, the more likely is he to experience stress which might be attributable to the fact that his job interferes with family life and out-of-school activities (figure 6).

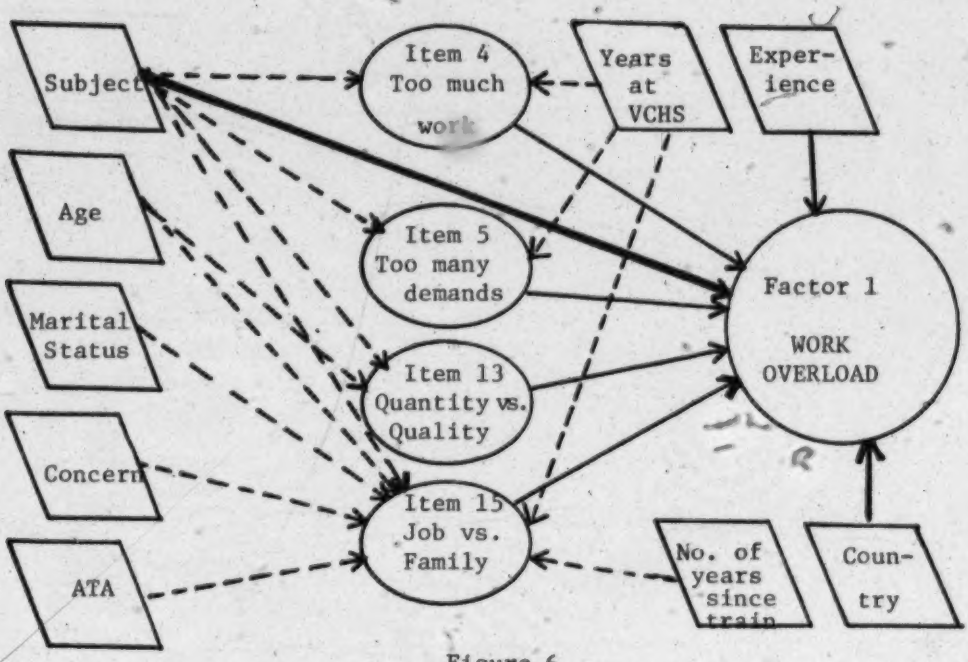

Figure 6

Demographic Variables
Contributing Significantly
to Stress Precipitated by
Factor 1 - Work Overload

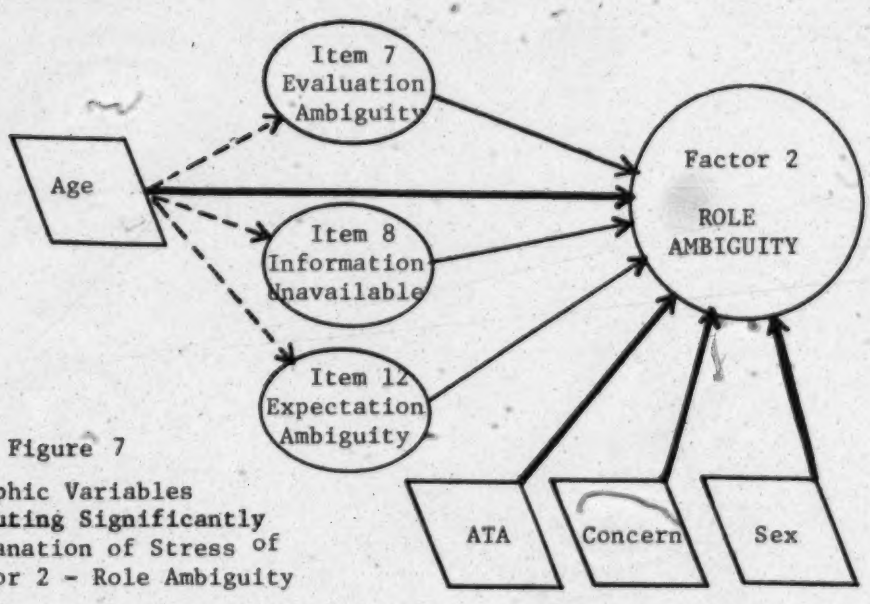

Figure 7

Demographic Variables
Contributing Significantly
To Explanation of Stress of
Factor 2 - Role Ambiguity

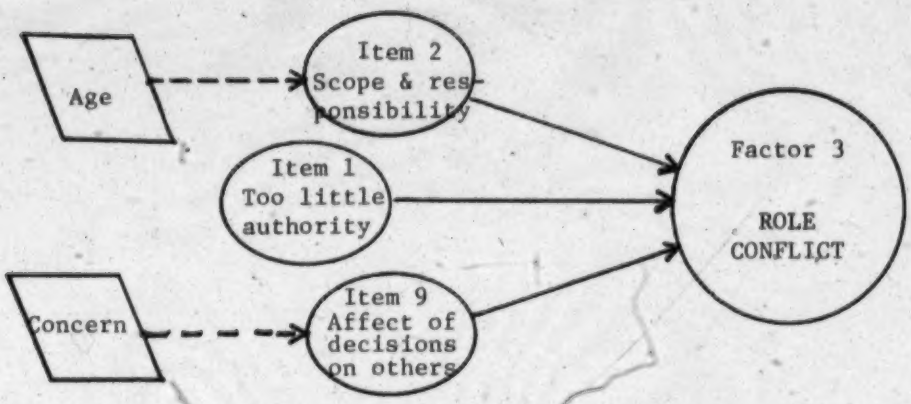

Figure 8

Demographic Variables Contributing Significantly to Stress Attributable To Factor 3 - Role Conflict

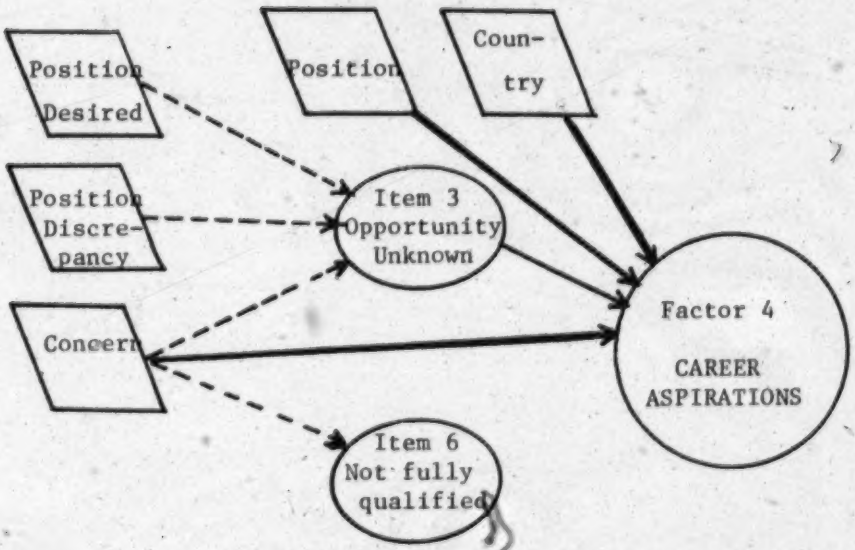

Figure 9

Demographic Variables Contributing Significantly to Stress Attributable to Factor 4 - Career Aspirations

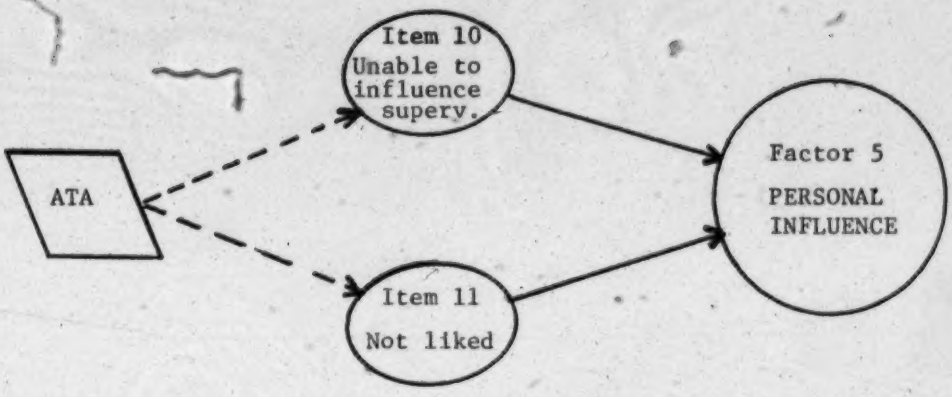

Figure 10

Demographic Variables Contributing Significantly
to the Explanation of Stress Due To

Factor 5 - Lack of Personal Influence

D. STRESS AND PERSONALITY

This section examines the relationship between the various single criterion (fifteen stress items and five factors) previously discussed in part B and the ten personality predictor variables, specifically

(1) Need for achievement (low score signifies a high need and vice-versa);

(2) Egalitarianism (low) vs. authoritarianism (high score);

(3) Introversion (low) vs. extraversion (high);

(4) Emotional stability (low) vs. neuroticism (high);

(5) Lie (self-criticalness (low) vs. self-defensiveness (high);

(6) Machiavellianism (high score indicates a machiavellian);

(7) Sociability (a high score indicates a high regard for the standards, rules and mores of society);

(8) Task orientation (a high score shows task preference);

(9) Service orientation (a high score shows a preference for service to the public);

(10) Self orientation (a high score shows that the individual performs most activities with his own self interest in mind).

The examination of the relationships between stress and personality is carried out as follows:

(1) Sample means of each of the personality attributes are compared to the population on which the tests had been standardized;

(2) The correlation matrix for the personality items is analyzed;

(3) The two correlation matrices relating, firstly, fifteen stress variables and the ten personality dimensions, and secondly, the five stress factors to personality, are discussed; and

(4) Canonical correlations are extracted comparing the battery of stress items with the battery of personality items.

1. Comparison with Standardized Norms

The frequency distributions and means of each of the personality dimensions (Table XIX) shows that VCHS teachers are not significantly different from the population on which the tests had been standardized except on neuroticism and lie dimension. On both lie and neuroticism, VCHS teachers were significantly ($p < 0.02$, 0.00001) lower.

2. Personality Relationships

Generally, the ten personality scales chosen are uncorrelated with each other (Table XX). A high correlation however does exist between the three attributes tested by the Bass Orientation Inventory--task and service orientation (0.277), task and self orientation (0.411) and self and service orientation (0.618).

Other significant correlations involve predominantly three variables--authoritarianism, self orientation, and lie. Task orientation, need achievement, and neuroticism are of lesser importance, i.e.

authoritarianism and neuroticism (+0.226);
authoritarianism and service orientation (+0.272);
authoritarianism and self orientation (+0.321);
authoritarianism and need achievement (+0.179);

self orientation and machiavellianism (-0.325);
self orientation and extraversion (+0.215);
task orientation and neuroticism (-0.201);
task orientation and lie (-0.186);

lie and sociability (-0.263);
lie and need achievement (+0.241).

What does this say about the personalities of VCHS teachers: the average teacher who is rigid is also neurotic and both self and service oriented but is low in need for achievement.

TABLE XIX

DISTRIBUTION OF PERSONALITY ATTRIBUTES

Victoria Composite High School Teachers

December, 1973

	Need Achievement		Authoritarianism		Neuroticism		Extraversion		Lie		Machiavellianism		Sociability		Task Orientation		Service Orientation		Self Orientation	
	Range	No.	Range	No.	Range	No.	Range	No.	Range	No.	Range	No.	Range	No.	Range	No.	Range	No.	Range	No.
*Low 25%	3- 7	17	7-12	21	0- 3	24	2- 7	15	0- 1	16	6- 8	14	2- 5	24	5-28	13	8-19	15	3-19	16
Middle 50%	8-11	45	13-19	37	4- 9	23	8-12	31	2- 3	29	9-11	39	6- 7	21	29-40	43	20-32	43	20-31	45
*High 25%	12-15	14	20-29	18	10-16	16	13-18	17	4- 7	18	12-14	11	8-10	19	41-50	20	33-47	18	32-39	15
Mean	9.145		15.855		6.270		9.905		2.651		9.906		6.406		34.697		26.368		25.829	
Standardized Mean	N.A.**		N.A.		10.4		10.9		3.8		Male 10.1 F 9.6		N.A.		Male 32.3 F 30.2		Male 24.3 F 26.7		Male 24.7 F 24.1	
S.Deviation	2.938		4.684		4.632		3.813		1.715		1.941		1.892		8.565		9.814		9.047	
Standardized S.D.	N.A.**		N.A.		4.6		4.0		1.7		N.A.		N.A.		M 6.68 F 6.56		M 6.42 F 6.15		M 6.33 F 5.89	
Total		76		76		63		63		63		64		64		76		76		76

* ± 0.675 standard deviations from the mean.

**The scale was changed from a 7-point to a 5-point for this test.

TABLE XX

PEARSON PRODUCT-MOMENT CORRELATIONS

PERSONALITY ATTRIBUTES OF VCHS TEACHERS

December, 1973

Attribute	Need Achievement	Authoritarianism	Neuroticism	Extraversion	Lie	Machiavellianism	Sociability	Task Orientation	Service Orientation	Self Orientation
Need achievement	1.000									
Authoritarianism	0.179*	1.000								
Neuroticism	0.006	0.226*	1.000							
Extraversion	-0.081	-0.016	0.059	1.000						
Self-defensiveness (criticalness)	0.241*	-0.021	-0.144	-0.046	1.000					
Machiavellianism	0.084	-0.101	0.063	-0.041	-0.062	1.000				
Sociability	-0.028	0.166	0.033	-0.141	-0.263*	-0.128	1.000			
Task Orientation	-0.160	0.043	-0.201*	-0.065	-0.186*	-0.163	0.120	1.000		
Service Orientation	0.098	0.272*	-0.025	0.002	-0.068	-0.031	0.109	0.227*	1.000	
Self Orientation	0.006	0.321*	0.062	0.215*	-0.104	-0.325*	0.063	0.411*	0.618*	1.000

*$p \leq 0.10$

The self-oriented teacher tends to be an extravert but not machiavellian.

Also interesting to note is that the lie score is positively correlated with need achievement and negatively with task orientation and sociability. What does this imply? The average teacher who is self-critical is high on need for achievement and task orientation. He would prefer that his achievements be accomplished within the established mores and standards of society. Self-defensive teachers, however, are low in the type of need for achievement measured by this questionnaire, are not task oriented and are not concerned with the rules of society.

3. The Stress Variables and Personality Correlation Matrix

A correlation matrix between the fifteen stress items and personality (Table XXI and Figure 11) shows that no personality variable correlates significantly with the stress items numbered 4, 5, 6, and 13. What does this reveal? That variables other than personality dimensions must be important in determining stress due to:

4 too heavy a work load;
5 inability to satisfy conflicting demands;
6 feeling of inadequacy because of qualifications for the job;
13 attempting to balance quantity of work with quality desired.

Two or more personality attributes seem to give some explanation for the stress identified through items 1, 7, 8, 11, 12, and 15. One personality variable offers an explanation on items 2, 3, 9, 10, and 14. The items that are significantly correlated with certain personality attributes are:

1	machiavellianism
1, 11	extraversion-introversion, service orientation
1, 3, 12	need achievement
8, 12, 15	self-orientation
7, 8, 12, 14, 15	task orientation
2, 7, 8, 9, 12	authoritarianism
10	lie
15	neuroticism

TABLE XXI

PEARSON PRODUCT MOMENT CORRELATIONS

PERSONALITY AND FIFTEEN STRESS ITEMS

(Pairwise Deletion)

Victoria Composite High School Teachers

December, 1973

Attribute	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Need Achievement	.176*	.142	-.182*	-.025	-.043	.098	-.023	.090	.093	-.127	-.129	-.204*	-.144	-.064	-.014
Authoritarianism	.139	.191*	.040	-.090	.001	.029	.195*	.257*	.182*	.160	.082	.261*	-.011	.138	.078
Neuroticism	-.071	.008	.001	.074	-.017	-.058	-.068	-.151	.085	.094	.069	-.107	.028	-.052	.200*
Extraversion	-.270*	-.109	.109	-.115	-.108	.022	.036	-.032	-.065	-.072	-.201*	.057	-.041	.036	-.046
Lie	-.065	.135	-.077	.006	.035	.053	-.095	.143	.076	-.234*	.069	-.128	-.034	-.075	-.034
Machiavellianism	-.179*	.005	.066	-.125	-.082	-.117	.038	-.074	.088	-.041	.002	.079	-.065	-.019	.023
Sociability	-.056	.041	.001	.032	-.082	-.071	.120	.070	.048	-.114	-.007	.103	.025	.128	.149
Task Orientation	-.089	-.067	.011	.085	.028	-.080	.194*	.270*	.020	-.156	-.063	.242*	.119	.218*	.335*
Service Orientation	-.220*	-.101	-.108	-.068	-.075	.031	-.120	-.031	.073	-.070	-.215*	.082	-.054	-.095	.036
Self Orientation	-.032	.003	-.155	.091	.081	-.037	-.033	.229*	.087	-.019	-.046	.176*	.030	.037	.235*

Teachers high on item 1--they have too little authority--are low in need achievement, are introverts, and are not service oriented nor are they machiavellian.

Those high on items

7 do not know how their supervisor evaluates them;
8 are unable to get information needed to do their job;
12 not know the expectations of others

are highly task oriented and very rigid. Those high on both items 8 and 12 are also self-oriented. Additionally, those high on item 12 are high need achievers.

Teachers who score high on item 15--their job interferes with family life and outside activities--are self-oriented, task oriented, and neurotic.

Individuals with high stress scores on item 11--unable to influence supervisor--are not service oriented but are introverted.

Rigidity is the one personality variable that influences items

2 unclear about responsbilities; and
9 worry about decisions affecting others.

Self-criticalness affects item 10--feel thay may not be liked and accepted--and high need achievement affects high stress attributable to item 3--not know promotional opportunities.

It would appear from these grouping of items that personality would offer some explanation for stress attributable to role conflict (items 1, 2, 9) to role ambiguity (7, 8, 12) and to lack of personal influence (items 10 and 11) but somewhat less on work overload (4, 5, 13, and 15) or career aspirations (3 and 6). The following section identifies the specific personality traits that are significantly related to the stress factors.

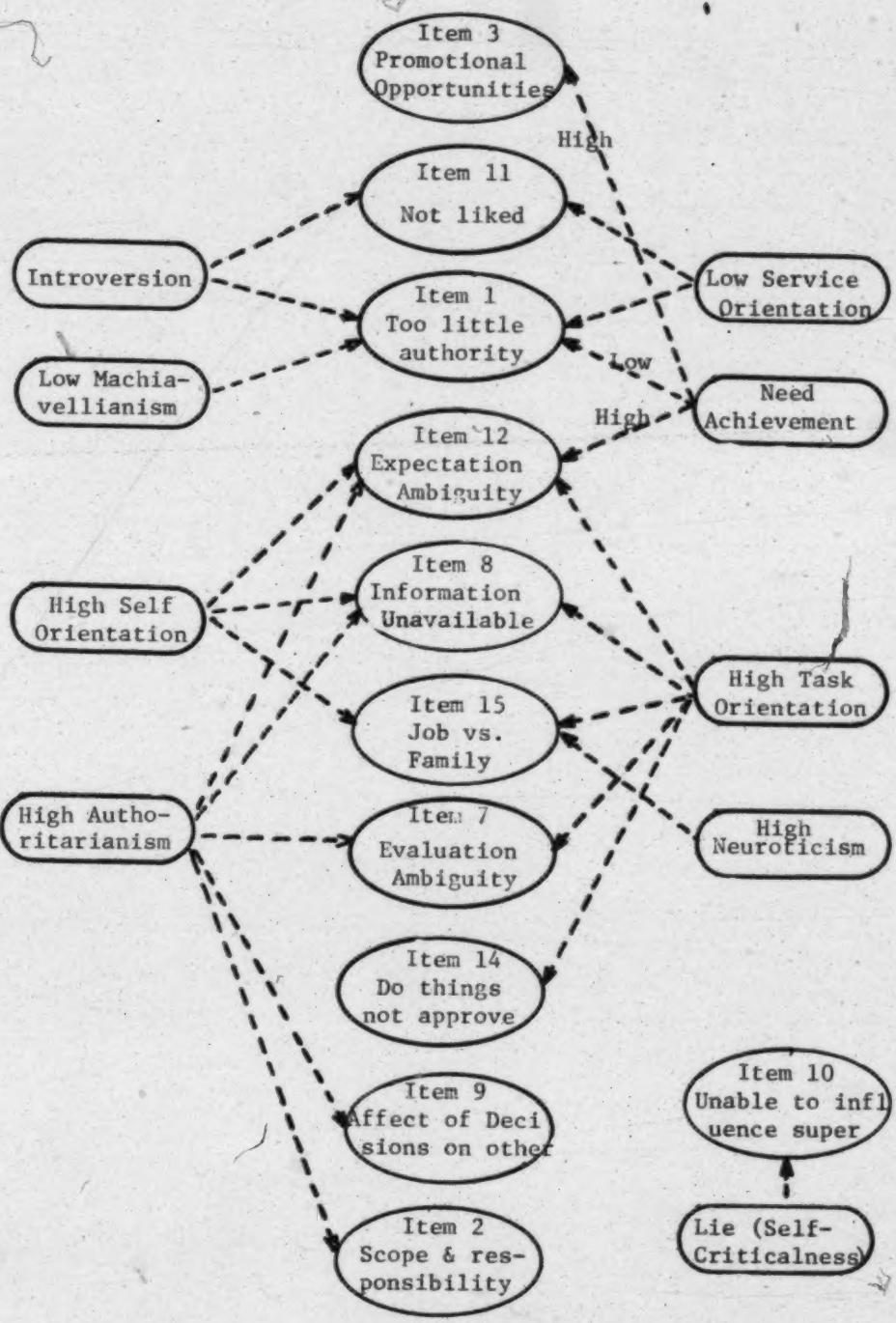

Figure 11

Personality Attributes
Contributing to Explanation of Stress Items

4. The Stress Factors and Personality Correlation Matrix

When the correlations between the five stress factors and each of the ten personality attributes were compared, it was found that there were only six significant ($p < 0.05$) relationships. These and ten others, significant at the 0.10 level, are:

Factor 1 -	Work Overload	- Task orientation (+0.270); Machiavellianism (-0.195); Self orientation (+0.182).
Factor 2 -	Role Ambiguity	- Task orientation (+0.389); Lie (-0.259); Authoritarianism (+0.245); Neuroticism (-0.225).
Factor 3 -	Role Conflict	- Need achievement (+0.260); Authoritarianism (+0.232); Lie (+0.227); Introversion - extraversion (-0.174).
Factor 4 -	Career Aspirations	- Introversion - extraversion (+0.259); Task orientation (-0.187).
Factor 5 -	Personal Influence	- Task orientation (-0.305); Need achievement (-0.209); Introversion - extraversion (-0.199).

In other words:

Task orientation and the introversion-extraversion dimension are the two personality attributes that are related most frequently to the stress factors. Task orientation is correlated positively and significantly with work overload and role ambiguity; negatively and significantly with career aspirations and lack of personal influence. Introverts experience stress because of role conflict and because they lack personal influence. Extraverts, on the other hand, have high stress due to career aspirations.

A contrast of the personality characteristics of teachers who are high on role ambiguity and high on role conflict reveals that rigidity and 'lie' are common attributes to both groups. However, while teachers

TABLE XXII

CORRELATION MATRIX

PERSONALITY AND FIVE STRESS FACTORS

Victoria Composite High School Teachers

December, 1973

Personality Attribute	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Need Achievement	.006	-.158	.260*	-.081	-.209*
Authoritarianism	-.102	.245*	.232*	-.004	.023
Neuroticism	.120	-.225*	.108	.046	.095
Extraversion	-.074	.045	-.174*	.259**	-.199*
Lie***	-.088	-.259**	.227*	.013	-.103
Machiavellianism	-.195*	-.138	.048	.117	.094
Sociability#	.111	.051	.052	-.111	-.147
Task Orientation	.270*	.389**	-.150	-.187*	-.305**
Service Orientation	.014	.035	-.079	.003	-.125
Self Orientation	.182*	.147	.058	-.166	-.137

*$0.05 < p < 0.10$

**$p < 0.05$

***According to the Wilde (1966) research, self-criticalness is characterized by low 'lie' scores; high self-defensiveness by high 'lie' scores.

Sociability is the term used in the Christie Mach V scale. A better label might be "conformity to societal standards and mores".

who experience stress because of role ambiguity are self-critical, their counterparts are self-defensive. In further contrast, while the 'role conflict' teachers are low in need achievement, the 'role ambiguity' group are task oriented. The lack of neuroticism in the 'ambiguity' group is counterbalanced by introversion in the 'conflict' grouping.

Between the two are those teachers who have high stress because of lack of personal influence: they are not task oriented, are introverted, and have a high need for achievement.

In other words: role ambiguity is a function of high task orientation, high authoritarianism, low neuroticism, and self criticalness. Teachers with the highest scores on role conflict have a low need for achievement, are highly authoritarian, introverted, and self defensive. For those for whom stress, because of lack of personal influence, is high, introversion, non-task orientation, and a high need for achievement are dominant personality characteristics.

Concerning the other two factors: Work overload is a function of high task and self orientation and low machiavellianism; career aspirations, of a lack of task orientation and of the extraverted personality of the individuals.

5. Canonical Correlations

Because correlation matrices give only a relationship between criteria, taken one pair at a time, the canonical correlation technique was also used to search for relationships between the two sets of variables. The idea is that, given two batteries of variables; in this case, the stress items and the personality dimensions; canonical correlation extracts those sets of linear combinations or factors which, while being

uncorrelated within the battery itself, provide maximum correlation of pairs of factors across the two batteries.

Canonical correlations between the ten personality attributes and the fifteen stress items (Appendix H) revealed only one significant relationship, the equations of which are:

> Personality Battery: P is a function of (- 0.463 need achievement + 0.442 service orientation - 0.430 task orientation - 0.377 lie (self-criticalness and self-defensiveness));
>
> Stress Battery: S is a function of (+ 0.421 Variable 1 + 0.640 Variable 15 - 0.527 Variable 13).

'P' appears to be measuring a contrast between high service orientation, high need achievement, and the other two variables: self-criticalness - defensiveness, and low task orientation; 'S' is measuring a contrast between stress attributable to a conflict between quantity-quality of work and that attributable to too little authority and the fact that the job interferes with family and out-of-school activities.

Furthermore, a high 'P' score is directly and significantly correlated with a high 'S' score, i.e. those teachers with relatively high scores on 'P' also have relatively high stress scores on 'S'. In other words, the teacher who is relatively high in need achievement, high in service orientation, who is highly self-critical, and relatively low in task orientation also finds that he has too little authority to carry out his responsibilities, and that his job interferes with his family and his other activities but definitely does not interfere with how well school work is accomplished. This suggests that this teacher may be a prestige seeker, and that his major contribution may lie outside the classroom. Stress therefore could be induced, for one group of teachers, because of career aspirations that are external to the classroom. Conversely,

the group of teachers who are low in 'P', i.e. service orientation, self defensiveness, who have a low need for achievement, and high task orientation and are low in 'S', i.e. worry that the quantity of work interferes with quality but not about having too little authority, or that work interferes with family life or out of school activities, may be school-career oriented, and that orientation may be directed toward doing their tasks as well as possible.

6. Summary

The findings of this section, which related the five stress factors and the fifteen variables to ten personality dimensions by examining correlation matrices and canonical correlations, include:

(1) For one group, stress may be induced by career aspirations which are external to the school environment. For another, career aspirations are tied to doing the job well;

(2) None of the personality attributes are significantly correlated to the following stress items:

has too heavy a work load (item 4);

is unable to satisfy conflicting demands (item 5);

feels inadequately qualified (item 6); and

must attempt to balance quantity of work with quality desired (13).

(3) The teacher with a high score on authoritarianism also tends to be neurotic, low in need achievement, and both service and self oriented; those teachers who are self oriented are also extraverts but are not machiavellian. Teachers who are task oriented also tend to be emotionally stable and self critical. Self-critical teachers tend to have a high need for achievement and prefer to accomplish tasks through accepted means.

(4) The main personality attributes that are significantly related to different types of job-related stress are diagrammed in Figures 12 to 16 (following) and are:

Work Overload	High task orientation Low machiavellianism High self orientation
Role Ambiguity	Low neuroticism Self criticalness High authoritarianism High task orientation
Role Conflict	Self defensiveness High authoritarianism Low need achievement Introversion
Career Aspirations	Extraversion Low task orientation
Personal Influende	Low task orientation Introversion High need for achievement.

(5) Task orientation is significantly correlated with four of the five factors--positively with work overload and role ambiguity and negatively with career aspirations and personal influence;

(6) The introversion - extraversion dimension is significantly correlated with three factors--positively with career aspirations and negatively with role conflict and personal influence;

(7) The personality of the teacher appears to be a contributing factor to work overload as well as to each of the other factors. The teacher with work overload is task oriented and self oriented and does not manipulate others into doing some of the work;

(8) Underlying both role conflict and role ambiguity is a rigidity of attitude. Furthermore, the teacher who has high stress because of role ambiguity is self-critical; the one who experiences high role conflict stress, self- defensive.

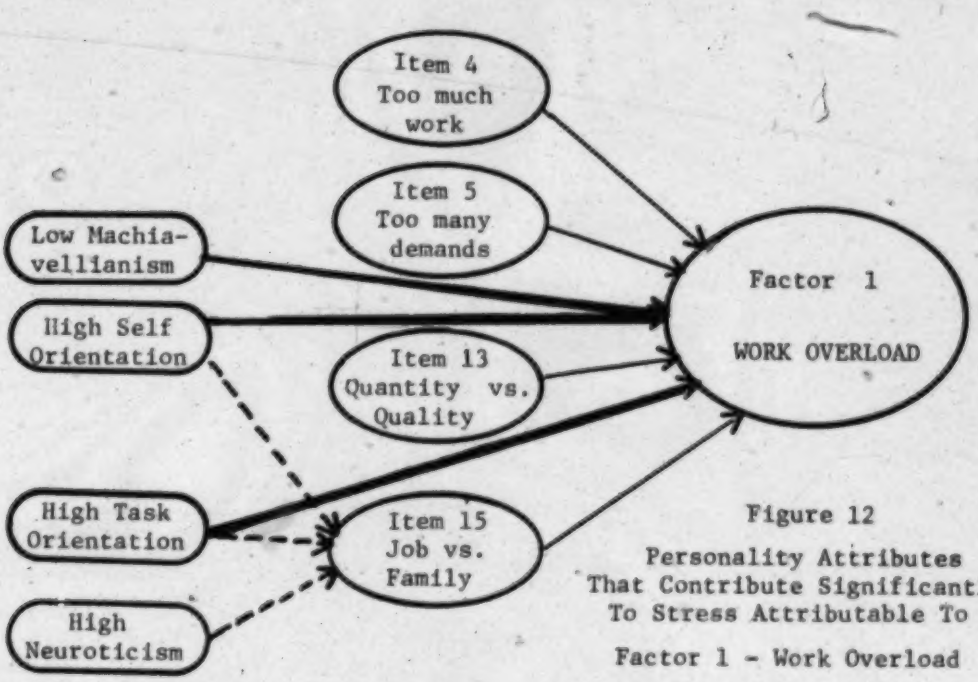

Figure 12

Personality Attributes That Contribute Significantly To Stress Attributable To Factor 1 - Work Overload

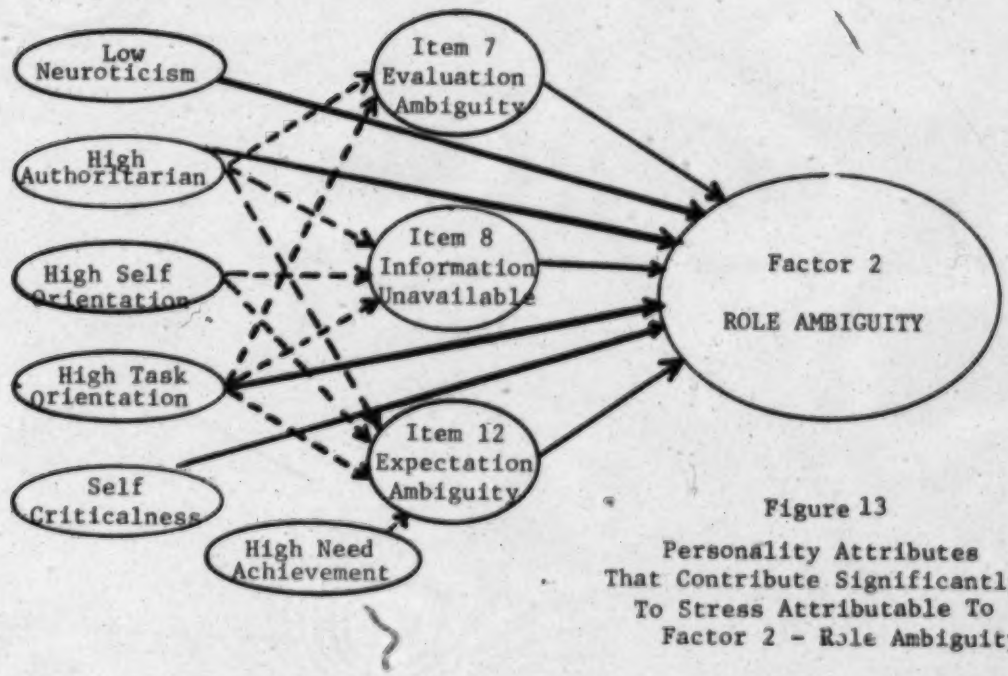

Figure 13

Personality Attributes That Contribute Significantly To Stress Attributable To Factor 2 - Role Ambiguity

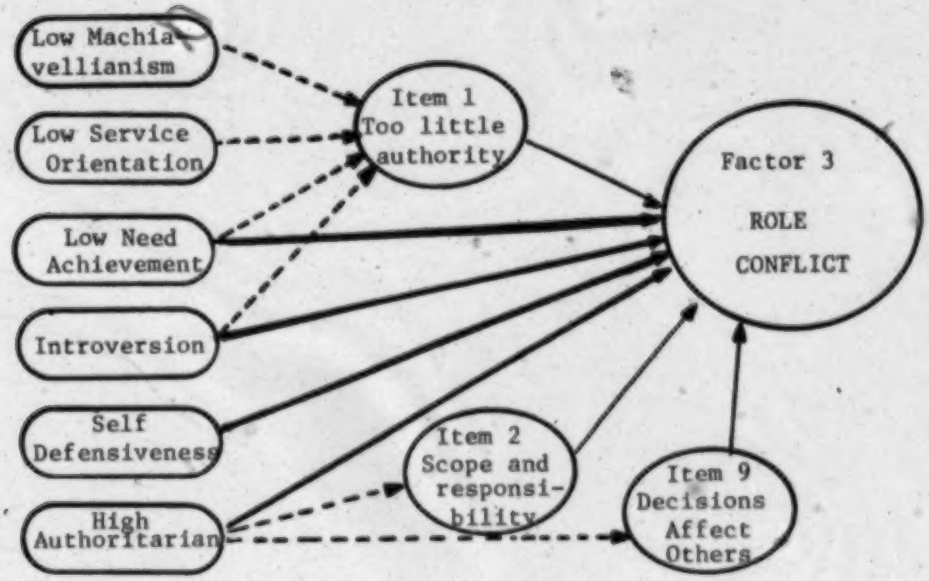

Figure 14

Personality Attributes
That Contribute Significantly
To Stress Attributable to

Factor 3 - Role Conflict

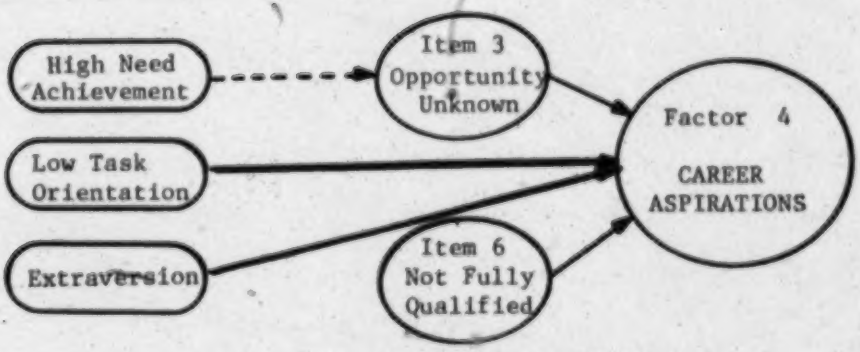

Figure 15

Personality Attributes
That Contribute Significantly
To Stress Attributable to

Factor 4 - Career Aspirations

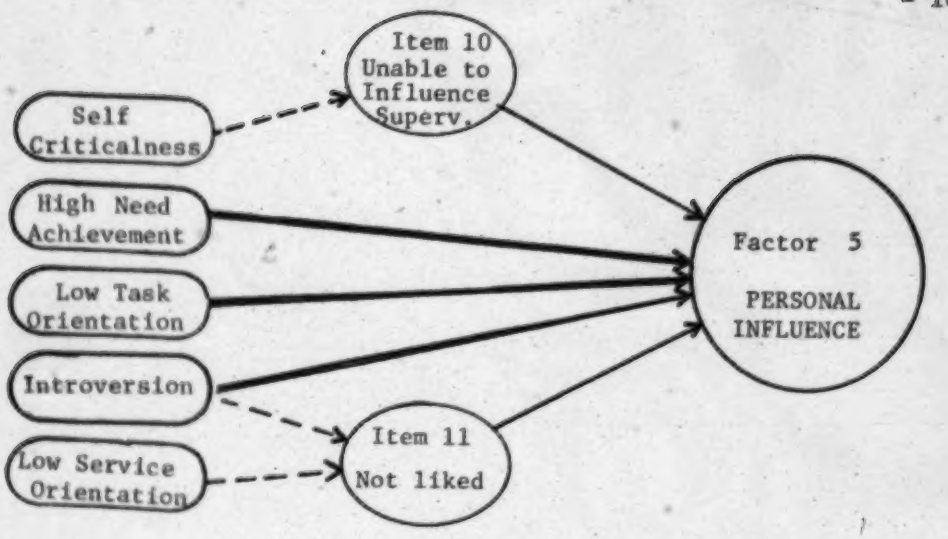

Figure 16

Personality Attributes
That Contribute Significantly
to Stress Attributable to
Factor 5 - Lack of Personal Influence

E. STRESS AND STRUCTURAL VARIABLES

Lastly, the third battery of variables which were compared to the fifteen stress items and the five factors were those concerned with organizational practices, specifically, the level of dissatisfaction with the following ten aspects of school structure:

(1) Horizontal coordination;

(2) Information distortion;

(3) Upward information requirements;

(4) Administrative receptiveness of ideas;

(5) Teaching conditions;

(6) Structural rigidity;

(7) Adequacy of planning;

(8) Delay in making decisions;

(9) Knowledge of promotional opportunities; and

(10) Chain of command.

In answering the questionnaire, teachers firstly rated the existing practices; secondly, the structure as they would prefer that it were, on a 5-point scale. For this study, the difference between the two ratings for each question was calculated; this difference was then squared and summed to give an index of dissatisfaction on the structural variable in question.

Three statistical procedures were used to analyze the data:

(1) A correlation matrix among the ten structural variables was computed;

(2) Correlation matrices between the stress variables and stress factors and the organizational variables named above were analyzed, and

(3) Canonical correlations were used to compare the two batteries.

Table XXIII shows that VCHS teachers are most highly dissatisfied with adequacy of planning and with the delay in decision making. Those structures with which teachers are least dissatisfied are 'administrative (upward) requirements for information' (mean = 1.36) and 'structural rigidity' (mean = 1.73).

Greatest spread in dissatisfaction scores (0-80, 5 items, standard deviation = 3.72) is on delay in making decisions, i.e. a few teachers are extremely dissatisfied with decision delay while others are not at all dissatisfied. The same spread in scores occurs for administrative receptiveness of ideas (0-96, 6 items), and structural rigidity (0-48, 3 items) but fewer teachers are as strongly dissatisfied. This is reflected in the high, but somewhat smaller, standard deviations (2.94 and 2.86, respectively). Furthermore, the extent of dissatisfaction, as reflected by high standard deviations, is also widespread on information distortion (S. D. = 3.00), planning adequacy (S. D. = 2.93), and promotional opportunities (S. D. = 2.71).

1. Correlations Among the Structural Variables

Correlations among the organizational variables are very high. Thirty of the forty-five are in excess of 0.50 and only one--information distortion and teaching conditions--is not significant at the 0.10 level (Table XXIV).

TABLE XXIII

FREQUENCY DISTRIBUTIONS

ORGANIZATIONAL PRACTICES*

Victoria Composite High School Teachers

December, 1973

Range	Horizontal Coordination	Information Distortion	Upward Information Requirements Administrative Receptiveness of Ideas	Teaching Conditions	Structural Rigidity	Adequacy of Planning	Delay in Making Decisions	Promotional Opportunities	Chain of Command
0	7	7	9	11	6	18	6	9	8	5
1- 5	16	17	22	17	7	26	9	10	7	8
6-10	13	10	18	11	11	7	9	9	11	4
11-15	6	6	6	5	9	2	8	8	8	13
16-20	6	10	1	3	8	6	14	7	10	12
21-25	4	6	7	4	4	2	4	7	4	2
26-30	4	0	0	3	2	1	2	4	4	5
31-35	3	2	0	4	6	1	3	3	2	3
36-40	3	1	1	2	3	0	3	1	3	7
41-45	1	0	0	1	2	0	2	1	3	1
46-50	0	2	0	0	2	1	1	0	0	0
51-55	0	0	0	1	3	0	2	0	0	2
56-60	0	1	0	0	0	0	1	1	3	1
61+	1	2	1	2	1	0	0	4	1	1
Range	0-61	0-66	0-64	0-96	0-73	0-48	0-57	0-80	0-73	0-91
No. of Items	5	5	5	6	8	3	5	5	6	7
Mean	10.86	11.88	6.79	11.81	16.09	5.18	14.49	14.61	14.87	16.44
Standardized Mean	2.17	2.38	1.36	1.97	2.01	1.73	3.00	2.92	2.48	2.35
S.D.	12.62	14.98	10.01	17.61	16.76	8.59	14.67	18.60	16.26	16.74
Standardized S.D.	2.52	3.00	2.00	2.94	2.10	2.86	2.93	3.72	2.71	2.39

*Sum of (Existing conditions - Desired conditions)^2. Mean 22.361; Standard deviation, 27.17.

TABLE XXIV

PEARSON PRODUCT-MOMENT CORRELATIONS

ORGANIZATIONAL PRACTICES
(EXISTING SITUATION - DESIRED SITUATION)

As Perceived by Teachers at VCHS

December, 1973

Practice	H.C.	I.D.	U.I.F.	A.R.I.	T.C.	S.R.	A.P.	D.D.M.	P.O.	C.C.
Horizontal Coordination	1.000									
Information Distortion	.606	1.000								
Upward Information Requirements	.512	.414	1.000							
Administrative Receptiveness of Ideas	.462	.504	.547	1.000						
Teaching Conditions	.286	.076*	.176	.202	1.000					
Structural Rigidity	.589	.700	.657	.609	.169	1.000				
Adequacy of Planning	.551	.556	.502	.466	.443	.513	1.000			
Delay in Making Decisions	.510	.712	.488	.630	.288	.700	.571	1.000		
Promotional Opportunities	.558	.560	.483	.523	.165	.656	.389	.612	1.000	
Chain of Command	.652	.576	.623	.594	.321	.667	.587	.501	.508	1.000

*Not significant at the 0.10 level.

2. The Fifteen Stress Items and the Ten Structural Variables

An examination of Table XXV and figure 17 reveals that structure is significantly related to stress, i.e. almost all of the correlations between the stress items and the organizational variables are significant at the 0.10 level. This is particularly true for eight stress items, as follows:

item 12, 15 are significantly correlated with all the structural variables;

11 with all structural variables except one, teaching conditions;

4, 5 with all except two, teaching conditions and chain of command;

7, 8 with all but one, chain of command;

14 is also significantly correlated with each structural variable except horizontal coordination, information requirements, and distortion.

In other words: A high level of correlation exists between almost all of structure and more than one-half of the stress items, specifically:

4 have too heavy a work load;
5 not be able to satisfy conflicting demands;
7 not know how the supervisor makes evaluations;
8 unable to get information needed;
11 unable to influence supervisor's decisions;
12 not know the expectations of other people;
14 feel that must do things against one's better judgment;
15 feel job interferes with family and out-of-school interests.

Furthermore, five aspects of structure--administrative receptiveness of ideas, information distortion, promotional opportunities, structural rigidity, and decision delay--are correlated significantly with items

3 not know opportunities for promotion;
10 not liked and accepted by colleagues;
13 the amount of work interferes with how well it is done.

A significant correlation also exists between an additional structural

TABLE XXV

PEARSON PRODUCT MOMENT CORRELATIONS

ORGANIZATIONAL STRUCTURE AND FIFTEEN STRESS ITEMS

(Pairwise Deletion)

Victoria Composite High School Teachers

December, 1973

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Coordination	0.025	0.105	0.041	0.183	0.178	-.178	0.201	0.228	0.052	0.138	0.285	0.272	0.146	0.139	0.340*
Info Distortion	0.013	0.165	0.265	0.257	0.231	-.086	0.344*	0.350*	0.034	0.338*	0.492*	0.232	0.169	0.121	0.540*
Info Requirements	0.039	0.204	0.053	0.243	0.270	-.064	0.250	0.243	0.238	0.190	0.188	0.229	0.181	0.154	0.347*
Idea Receptiveness	0.183	0.154	0.238	0.242	0.306	0.021	0.447*	0.329*	0.136	0.176	0.373*	0.347*	0.310	0.350*	0.424*
Teaching Conditions	0.071	-.008	-.134	0.064	0.129	-.197	0.361*	0.182	0.192	0.001	-.043	0.271	0.141	0.245	0.335*
Structural Rigidity	-.013	0.072	0.199	0.232	0.205	-.060	0.347*	0.358*	0.064	0.343*	0.405*	0.361*	0.213	0.282	0.492*
Planning Adequacy	0.102	0.185	0.059	0.185	0.222	-.186	0.260	0.427*	0.161	0.046	0.214	0.216	0.139	0.301	0.582*
Decision Delay	-.016	0.032	0.341*	0.368*	0.374*	-.129	0.400*	0.391*	0.090	0.294	0.294	0.328*	0.346*	0.196	0.570*
Promotional Opport.	0.117	0.050	0.262	0.312	0.240	-.028	0.301	0.312	0.250	0.323*	0.253	0.459*	0.260	0.292	0.425*
Chain of Command	0.093	0.044	-.015	0.060	0.108	-.135	0.159	0.152	0.040	0.106	0.235	0.172	0.048	0.176	0.311

*$p < 0.01$

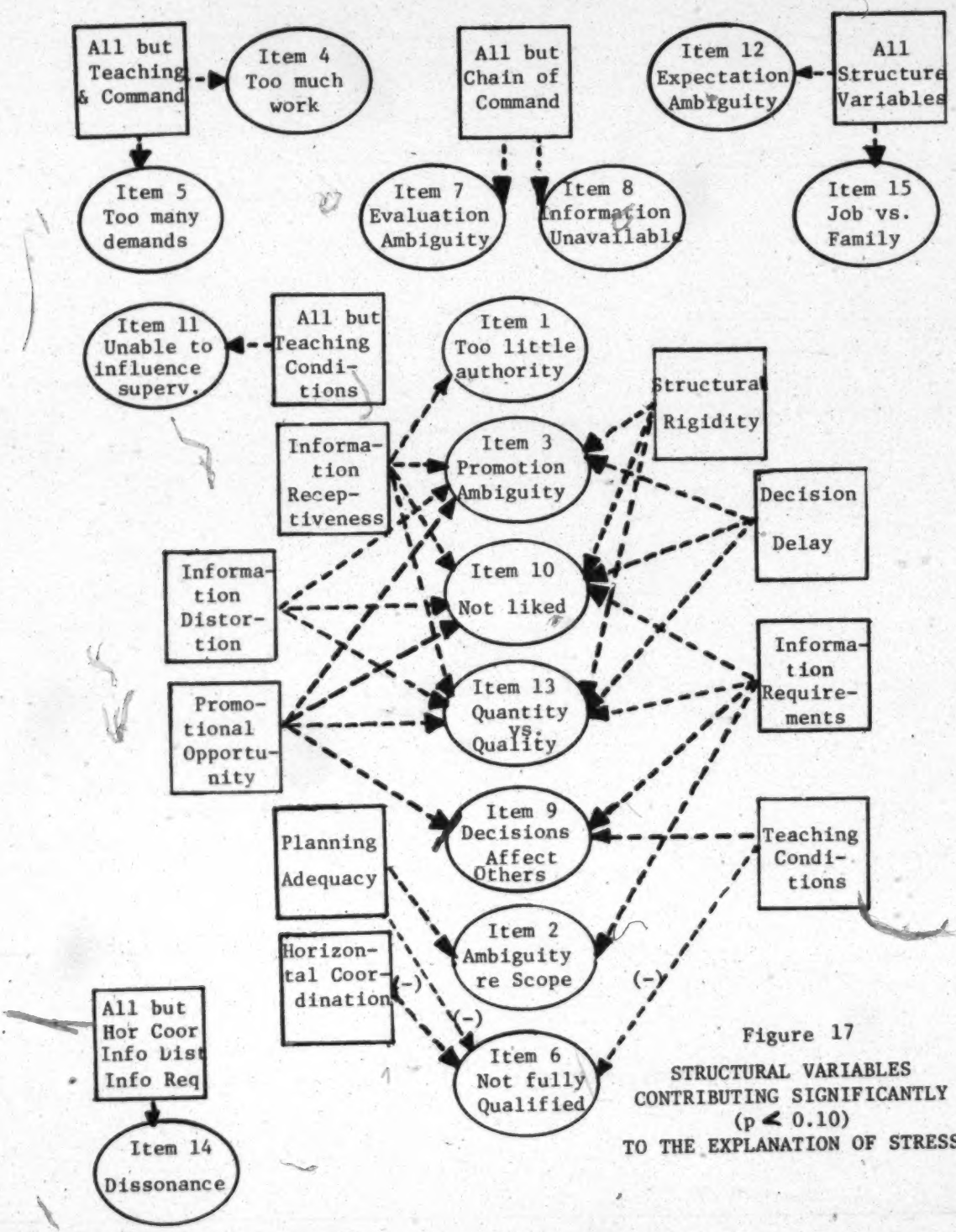

Figure 17

STRUCTURAL VARIABLES CONTRIBUTING SIGNIFICANTLY ($p < 0.10$) TO THE EXPLANATION OF STRESS

variable, dissatisfaction with administrative requirements for information, and items 10 and 13.

Of the four stress items remaining, three--1, 2, and 9--are positively and significantly correlated with dissatisfaction with specific aspects of structure, as follows: item 1 with administrative receptiveness of ideas; item 2 with information requirements and with planning adequacy; and item 9 with information requirements, with teaching conditions, and with promotional opportunity. Quantitatively, few structural variables, therefore, influence items

1 teachers feel that they have too little authority;
2 feel unclear about scope and responsibility of their work; and
9 worry about decisions that affect others.

The last item--item 6, teachers feel that they are not fully qualified to handle the job--is the only stress item that is correlated significantly and negatively with any structural variable. (In fact, nine of the ten correlations are negative; the tenth is almost zero. Furthermore, only five of the remaining 140 correlations are negative.) Significant correlations are with horizontal coordination, teaching conditions, and planning adequacy. It follows that the average teacher who has high stress precipitated by a feeling that his qualifications for the job are inadequate does not report dissatisfaction with the structural variables mentioned. On the other hand, the teacher who feels sufficiently qualified to do his job, is significantly dissatisfied with the school's system of horizontal coordination, planning, and with teaching conditions.

An extraction of correlations at the 0.01 level shows that, quantitatively, four aspects of structure are most important, as follows:

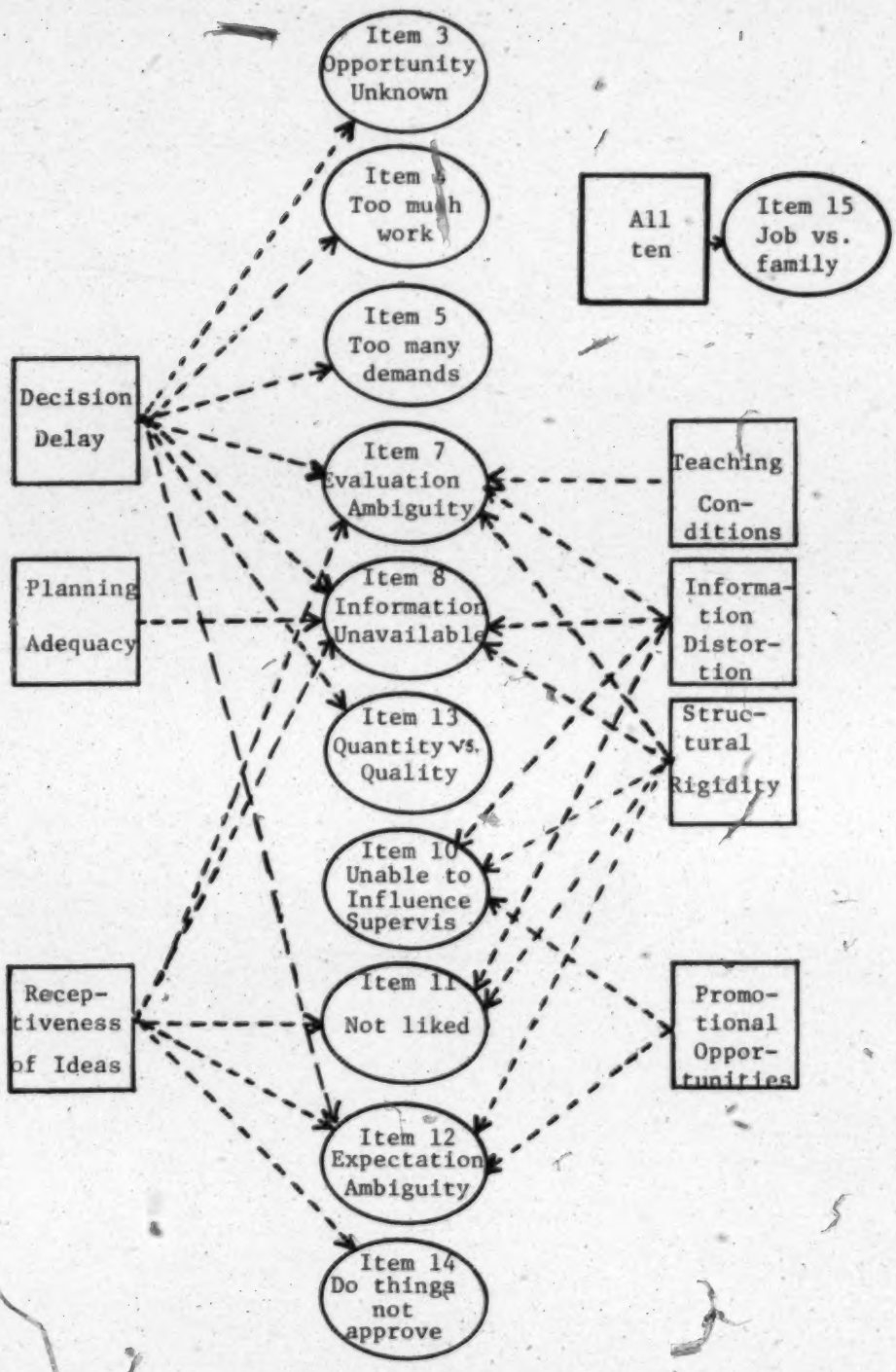

Figure 18

STRUCTURAL VARIABLES CONTRIBUTING SIGNIFICANTLY ($p < 0.01$)
TO THE EXPLANATION OF STRESS

Decision delay and items 3, 4, 5, 7, 8, 12, 13, and 15;
Receptiveness of ideas and items 7, 8, 11, 12, 14, and 15;
Information distortion and items 7, 8, 10, 11, and 15;
Structural rigidity[16] and items 7, 8, 10, 11, 12, and 15.

In addition to the above, planning adequacy is correlated with item 8; promotional opportunities with items 10 and 12; and teaching conditions with item 7.

It is interesting to note that, even at the 0.01 level of significance, all structural variables, except 10, chain of command,[17] continue to be highly correlated with item 15--the job interferes with family and outside activities.

To summarize: the four most important (quantitatively) structural variables are: decision delay, receptiveness of ideas, information distortion, and structural rigidity. To a lesser extent, planning adequacy, promotional opportunity, and teaching conditions are also noteworthy. The least important aspect (as far as high stress) is the chain of command followed by horizontal coordination, and information requirements.

3. The Five Stress Factors and Ten Structural Variables

A correlation matrix obtained using the stress factors and the structural variables (Table XXVI) shows that every structural variable is positively and significantly correlated with factor 2, role ambiguity, and

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16. The reader is cautioned against attaching a value judgement to this term. Rigidity of structure refers to 'dissatisfaction with the existing conditions'. No intent of egalitarianism or authoritarianism is implied. Indeed, it is possible that both aspects of this variable could be the basis of a high correlation on any specific item.

17. The correlation between item 15 and chain of command is 0.311--almost sufficiently significant to be included at the 0.01 (two-tailed) level.

that eight of the ten structural variables are positively correlated, at a 0.10 or lower level, with work overload. Role conflict stress, however, is significantly correlated with only one aspect, i.e. negatively with decision delay. On factor 4, career aspirations, a negative correlation exists with horizontal coordination, teaching conditions, planning adequacy, and chain of command. Four structural components--horizontal coordination, information distortion, administrative receptiveness of ideas, and structural rigidity--are correlated significantly and positively with the last of the stress factors, stress precipitated by lack of personal influence.

To state this in another form: Teachers who have high stress because they dislike ambiguity in their work roles (and must therefore prefer order, preciseness, and predictability) have very high dissatisfaction levels with all aspects of organizational structure at VCHS. This must infer that they perceive the school environment as too 'free' as unstable, or, at least, as dynamic.

Correlations between the significant variables of structure and work overload are generally between the 0.05 and 0.10 significance level.[18] Although none of the correlations are at the 0.01 level, three are below 0.05, i.e. administrative receptiveness of ideas, planning adequacy, and decision delay. This suggests that teachers do perceive their work load increased by the type of structure that could be changed by a conversion in attitude, perspective, etc. of the 'role sender'.

---

18 Significance levels for stress and structure are:
$p < 0.10 = 0.168$
$p < 0.05 = 0.258$
$p < 0.01 = 0.328$

TABLE XXVI

CORRELATION MATRIX

ORGANIZATIONAL STRUCTURE AND FIVE STRESS FACTORS

Victoria Composite High School Teachers

December, 1973

Organizational Structure	Factor 1 Work Overload	Factor 2 Role Ambiguity	Factor 3 Role Conflict	Factor 4 Career Aspirations	Factor 5 Personal Influence
Horizontal Coordination	0.194*	0.312*	0.033	-0.174*	0.177*
Information Distortion	0.194*	0.398*	-0.067	-0.079	0.297*
Upward Information Requirements	0.225*	0.260*	0.114	-0.035	0.117
Administrative Receptiveness of Ideas	0.276*	0.421*	0.094	-0.045	0.216*
Teaching Conditions	0.118	0.326*	0.005	-0.260*	-0.097
Structural Rigidity	0.231*	0.451*	-0.049	-0.063	0.269*
Planning Adequacy	0.276*	0.436*	0.154	-0.232*	-0.023
Decision Delay	0.324*	0.436*	-0.181*	-0.041	0.112
Promotional Opportunities	0.189*	0.374*	-0.042	0.029	0.108
Chain of Command	0.129	0.239*	0.068	-0.192*	0.157

*r = .168 is significant at the 0.10 level (one-tailed) level of significance.

Because both role ambiguity and role conflict are highly and positively correlated with authoritarianism, and because they themselves are highly correlated (Appendix C), it would be assumed that teachers with high stress on these two factors would also be highly dissatisfied with the prevalent freer educational structural tendencies. Structure, however, offers almost no explanation of stress precipitated by role conflict. This is surprising when one considers the three stress items which are components of this factor, i.e. those concerning lack of authority, scope and responsibility, and effect of decisions on others. Furthermore, it is in direct contrast to the very high significant correlations of structure with the role ambiguity factor.

Speculation can perhaps suggest some reasons: Teachers with high role conflict do not attribute their problems to structure but to their role sender's personality, their own personality, their particular demographic situation (age, concern), to exogenous variables. Perhaps the teacher's view of himself is the distinguishing characteristic.

A comparison of the demographic variables which are stress precipitators for these two factors offers no explanation: Women and teachers who are between 31 - 40 years of age experience the highest role ambiguity stress (and therefore the greatest dissatisfaction with structure). No demographic variables are significantly correlated with role conflict.

The personality attributes of each group, however, provide a better clue: Although both groups of teachers are authoritarian, the teacher with high role ambiguity is emotionally stable but self-critical; the teacher high in role conflict stress is introverted and self-defensive. The first teacher would tend, not only to be critical of himself, but also of his surroundings; the latter to be cautious in expressing dissatisfaction.

It is interesting to note that teachers with the highest career aspiration stress are least dissatisfied with structure; in fact, the higher this type of stress becomes, the greater is the satisfaction--particularly with horizontal coordination, teaching conditions, planning adequacy, and the chain of command. Table XXIII, however, reveals that quite a number of teachers feel that conditions in these four areas, are less than ideal--in planning adequacy, for example, 32 of 77 teachers have dissatisfaction scores above the extremely high mean of 3.00 (highest of the ten means on structure).

The analysis given in the section on demography and stress determined that curricular associates were more likely than teachers or administrators to have high career aspiration stress. It is possible perhaps that a number of teachers in this group view structure from an administrative viewpoint or that they are the reason for other teachers high dissatisfaction with structure. It is also possible that curricular associates are so interested in their personal careers that they are not aware of structural deficiencies. Perhaps, too, in their desire for promotion, this group is unwilling to express a dissatisfaction with existing structure--inspiteof the fact that they are extraverts and studies (Eysenck, 1961) show that extraverts are more dissatisfied and complain more than introverts.

In conclusion, high stress due to role ambiguity is very highly dependent on structure or perception of structure; that due to role conflict, however, is not. Furthermore, structure offers some explanation of high stress that is attributable to work overload, career aspirations, and lack of personal influence.

4. Canonical Correlations

The canonical correlations statistical technique extracts those sets of linear combinations which while being uncorrelated within the battery itself, provide maximum correlations of pairs of factors across the two batteries. To gain some additional insight therefore into this same data, canonical correlations were also computed (Appendix I) and two sets of linear combinations were found to be significant ($p < 0.005$, 0.104).

The first set has equations:

> Structural Battery: U is a function of (+0.632 information distortion + 0.399 rigidity of structure + 0.331 adequacy of planning - 0.438 chain of command);
>
> Stress Battery: E is a function of (+ 0.393 Variable 11 + 0.797 Variable 15).

According to these functions, 'U' is highest when a teacher's dissatisfaction with three structural variables--information distortion, structural rigidity, and planning adequacy--is high but no or little dissatisfaction with chain of command exists. Conversely, when dissatisfaction with information distortion, structural rigidity, and planning adequacy are minimal, 'U' is lowest.

'E' is highest when stress on items

11 unable to influence supervisor's decisions;
15 work interferes with family and outside activities

is highest and vice-versa.

When the average teacher has a high dissatisfaction level with all three of information distortion, with structural rigidity, and with planning adequacy, and is not unhappy with the existing chain of command, he also has high stress because he is unable to influence his supervisor's

decisions and because his work interferes with family and outside activities. It appears that a group of teachers are unhappy with the plans and decisions made by supervisors and would like more personal input.

The second set of linear combinations that compare organizational structure to stress variables have equations:

> Structure Battery: U is a function of (+ 0.539 upward information requirements + 0.399 teaching conditions + 0.455 delay in making decisions - 0.456 rigidity of structure);
>
> Stress Battery: E is a function of (+ 0.435 Variable 7 + 0.351 Variable 9 + 0.301 Variable 13 - 0.411 Variable 11 - 0.314 Variable 6)

and show that 'E' increases when the teacher experiences stress because he does not know how his supervisor evaluates his performance, worries that his decisions will affect others, and when he feels that the quantity of work interferes with its quality relative to the stress he experiences because of his lack of qualifications for the job and his inability to influence his supervisor. It appears that 'E' characterizes the professional teacher.

A teacher with a high 'U' is dissatisfied with upward information requirements, teaching conditions, and decision delay relative to his dissatisfaction with rigidity of structure.

The high positive correlation of 'U' and 'E' would suggest that the teacher who feels confident in his professional role experiences stress because of a dissatisfaction with teaching conditions, decision delay, and upward information requirements. On the other hand, the less confident teacher experiences stress due to rigidity of structure, because he feels insufficiently qualified for the job, and because he is unable to influence his supervisor.

In other words, the less of a professional image the teacher has of himself, the more willing is he to accept control and assistance and to be satisfied with the existing structural situation. The more professional the outlook, the less desire for external controls.

5. Summary

(1) Greatest teacher dissatisfaction on the structural variables is on adequacy of planning (mean = 3.00) and delay in decision making (mean = 2.92);

(2) Furthermore, a few teachers are intensely dissatisfied with delay in decision making, structural rigidity, and administrative receptiveness of ideas (total scores are very high, see Table XXIII);

(3) The average teacher has lowest dissatisfaction levels on information requirements ($\bar{x}$ = 1.36) and structural rigidity ($\bar{x}$ = 1.73);

(4) Almost all aspects of structure are significantly correlated with eight of the fifteen stress items, namely:

4 too heavy a work load;
5 not satisfy conflicting demands;
7 not know evaluation of supervsior;
8 unable to get information needed;
11 unable to influence supervisor's decisions;
12 not know what people expect;
14 feel that must do things against one's better judgment;
15 feel job interferes with family and out-of-school activities;

(5) Approximately one-half of the structural variables are correlated with each of three additional items:

3 not know opportunities for promotion;
10 not liked and accepted by colleagues;
13 the amount of work interferes with how well it is done.

(6) Those aspects of structure which correlate with the greatest number of stress items ($p < 0.01$) include dissatisfaction with decision

delay, receptiveness of ideas, information distortion, and structural rigidity;

(7) Teachers at VCHS generally have low stress on item 6; they feel they are fully qualified to handle their job. Furthermore, this item is negatively correlated with nine of the ten structural variables, and almost at the zero level with the tenth. It is the only stress item which is significantly and negatively correlated with any of the structural variables. Significant correlations are with horizontal coordination, teaching conditions, and planning adequacy;

(8) Teachers who have high stress precipitated by work overload are also highly dissatisfied with administrative receptiveness of ideas, planning adequacy, and decision delay (figure 19; $p < 0.05$, two-tailed). This infers that these teachers feel that their stress levels could be decreased by a change in attitude, perspective, etc. of their role senders;

(9) Teachers with high role ambiguity stress are highly dissatisfied with all aspects of structure (figure 20). This role ambiguity-structure dissatisfaction combination infers that some teachers view the VCHS organization as lacking preciseness, order, and predictability;

(10) Structure does not provide an adequate explanation of the high stress that was measured by items 1, 2, and 9--items that factor analysis previously grouped and which are referred to as role conflict in this study (figure 23);

(11) Structure provides some explanation of high stress precipitated by both career aspirations (figure 22) and lack of personal influence (figure 23), i.e.

(12) A significant correlation between career aspirations and dissatisfaction with teaching conditions suggests that some teachers feel the everyday classroom situation is not conducive to career recognition. Teachers with high stress on this factor, probably curricular associates, report greater satisfaction with structure than do other teachers (correlations are negative);

(13) Dissatisfaction with horizontal coordination, with information distortion, receptiveness of ideas, and with structural rigidity provides some explanation of high stress attributable to lack of personal influence.

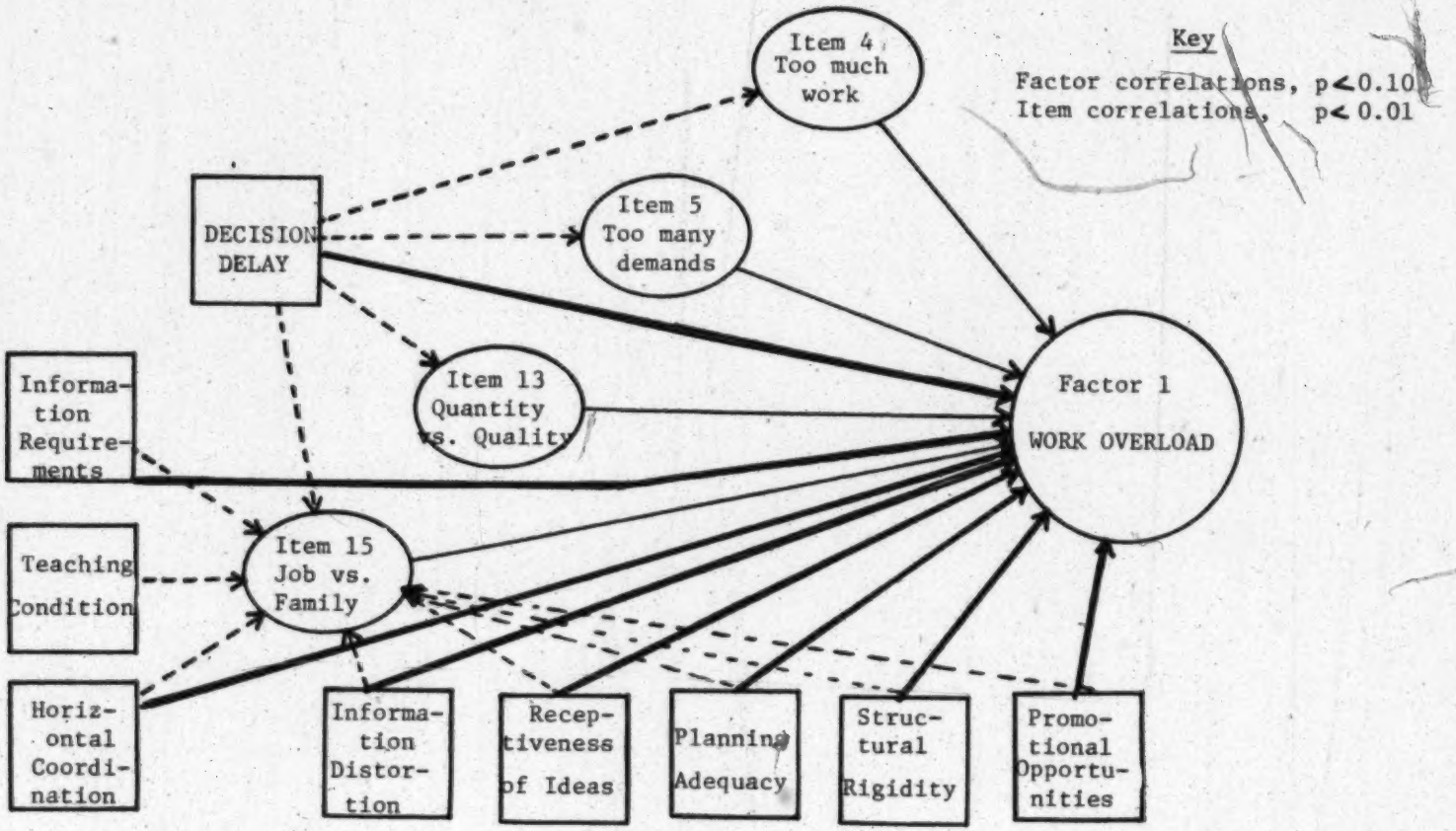

Figure 19

Structural Variables Contributing Significantly to the Explanation of

Factor 1 - Work Overload

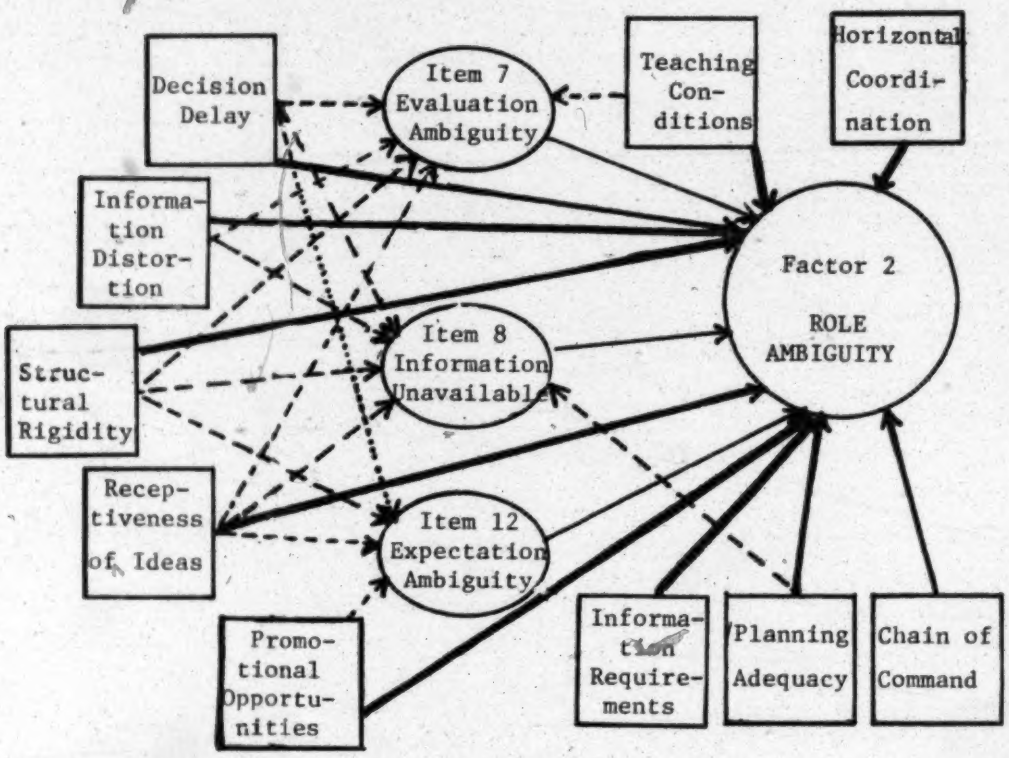

Figure 20

Structural Variables Contributing Significantly to the Explanation of

Factor 2 - Role Ambiguity

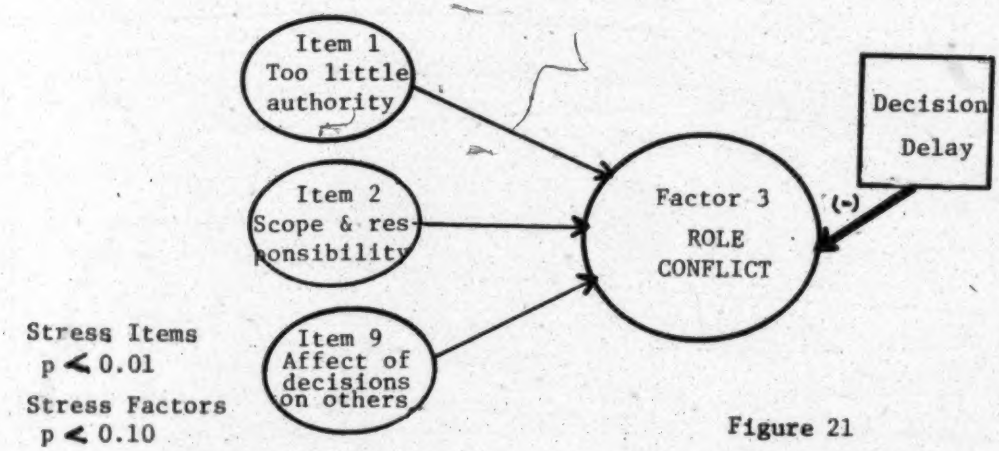

Figure 21

Structural Variables Contributing Significantly to the Explanation of

Factor 3 - Role Conflict

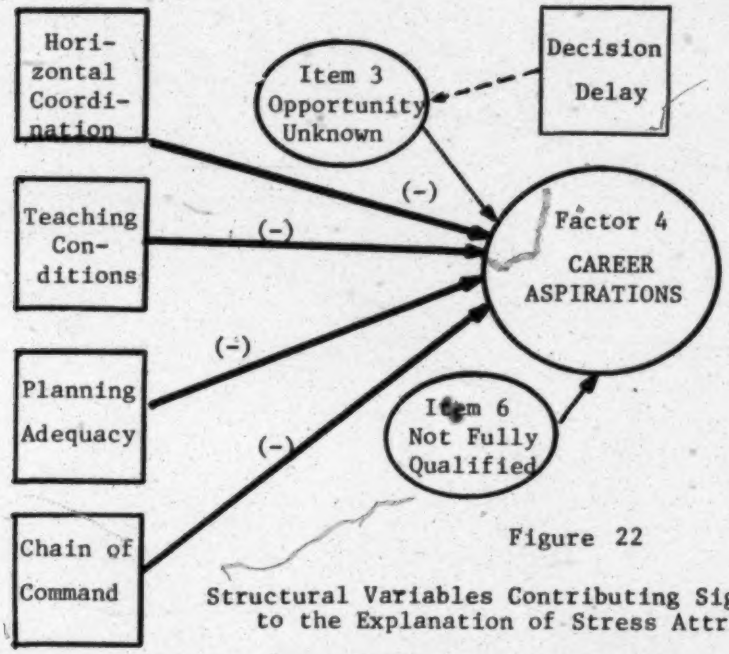

Figure 22

Structural Variables Contributing Significantly to the Explanation of Stress Attributable to Factor 4 - Career Aspirations

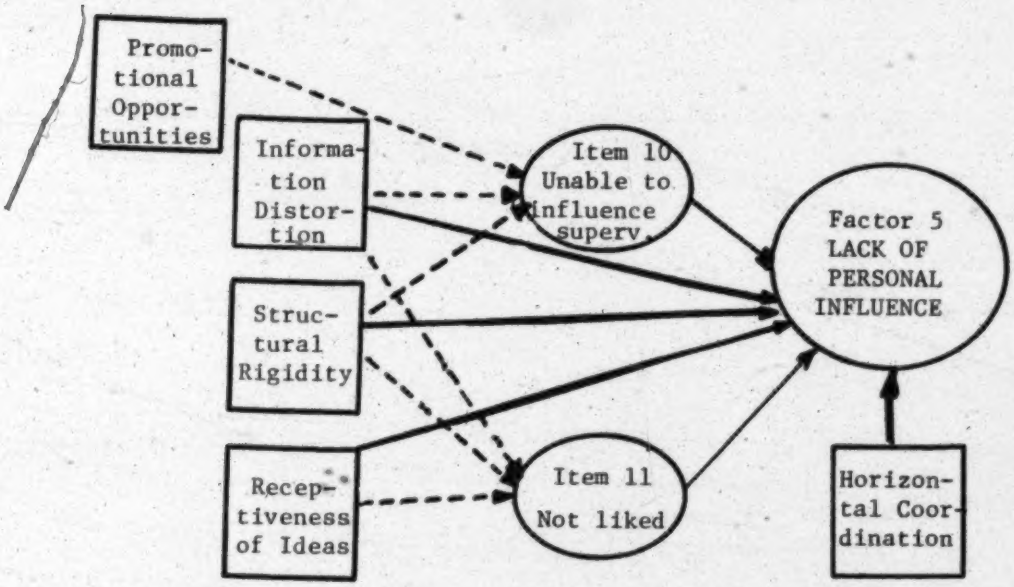

Figure 23

Structural Variables Contributing Significantly to the Explanation of Stress Attributable to Factor 5 - Lack of Personal Influence

F. STRESS AND DEMOGRAPHIC, PERSONALITY, AND STRUCTURAL VARIABLES

The merging of the effects on stress of demographic, personality, and structural variables appeared to be a necessary final step. The first step in this merging then was to examine the relationship between the three contributing batteries of variables and the stress items and stress factors. The second step was to examine the correlation matrix between personality and structure. Finally, in view of the personality-structure relationships, a partial correlation matrix with stress and structure, controlling for personality and three demographic variables--age, number of years of experience at Victoria Composite High School, and level of participation in ATA activities--was computed. This section is organized on that basis.

1. Relationship of the Variables

The first step in integrating the various batteries of variables was to look at the relationship of the fifteen stress items and five stress factors when paired with each of the demographic, personality, and structure variables. This synthesis, through each of the stress factors, is achieved in Table XXVII and Figures 24 to 28.

Work Overload. Figure 24 shows that the 'key' to work overload is structure and item 15--a feeling that the job interferes with family life and outside activities. At the 0.10 level of significance, twenty different variables are correlated with this item, including all of structure, high neuroticism, high task orientation, high self orientation, and seven demographics--age, concern in teaching, teaching years at VCHS, ATA participation, marital status, subject taught, and number of years

TABLE XXVII

VARIABLES WHICH SIGNIFICANTLY INFLUENCE

STRESS ATTRIBUTABLE TO VARIOUS FACTORS AND ITEMS

Factors /Items	Demography ($p < 0.10$)	Personality ($p < 0.10$)	Structure ($p \leq 0.10$)	Structure ($p < 0.01$)
		Factor 1 - Work Overload		
I. 4,5	Subject Years at VCHS	Nil	All except Teaching Conditions & Chain of Command	Decision Delay
I. 13	Subject, Age	Nil	Idea Receptiveness Information Distortion Promotional Opportunities Structural Rigidity Decision Delay Information Requirements	Decision Delay
I. 15	Age, Concern ATA, Subject Marital Status Years at VCHS Since Training	Self Orientation Task Orientation Neuroticism	All	All except Chain of Command
F. 1	Subject Years Experience Country	Task Orientation Self Orientation Machiavellianism(-)	All except Teaching Conditions & Chain of Command	Decision Delay
		Factor 2 - Role Ambiguity		
I. 7	Age	Task Orientation Authoritarianism	All except Chain of Command	Structural Rigidity Decision Delay Information Distortion Idea Receptiveness Teaching Conditions
I. 8	Age	Self Orientation Task Orientation Authoritarianism	All except Chain of Command	Planning Adequacy Decision Delay Information Distortion Idea Receptiveness Structural Rigidity
I. 12	Age	Need Achievement(High) Self Orientation Task Orientation Authoritarianism	All	Decision Delay Idea Receptiveness Structural Rigidity Promotional Opportunities

		Authoritarianism	Chain of Command	Information Distortion Idea Receptiveness Teaching Conditions
I. 8	Age	Self Orientation Task Orientation Authoritarianism	All except Chain of Command	Planning Adequacy Decision Delay Information Distortion Idea Receptiveness Structural Rigidity
I. 12	Age	Need Achievement(High) Self Orientation Task Orientation Authoritarianism	All	Decision Delay Idea Receptiveness Structural Rigidity Promotional Opportunities
F. 2	Age Concern Sex ATA	Task Orientation Self-Criticalness Authoritarianism Neuroticism(-)	All	Information Distortion Idea Receptiveness Structural Rigidity Planning Adequacy Decision Delay Promotional Opportunities
		Factor 3 - Role Conflict		
I. 1	Nil	Machiavellianism(-) Introversion Service Orientation(-) Need Achievement(Low)	Idea Receptiveness	Nil
I. 2	Age	Authoritarianism	Information Requirements Planning Adequacy	Nil
I. 9	Concern	Authoritarianism	Information Requirements Teaching Conditions Promotional Opportunities	Nil
F. 3	Nil	Need Achievement(Low) Authoritarianism Self Defensiveness Introversion	Decision Delay(-)	Nil
		Factor 4 - Career Aspirations		
I. 3 Pos	Position Desired Concern Position Discrepancy	Need Achievement(High)	Idea Receptiveness Information Distortion Promotional Opportunities Structural Rigidity Decision Delay	Decision Delay
I. 6	Concern	Nil	Horizontal Coordination(-) Teaching Conditions(-) Planning Adequacy(-)	Nil
F. 4	Concern Position Country	Extraversion Task Orientation(-)	Horizontal Coordination(-) Teaching Conditions(-) Planning Adequacy(-)	Nil

Promotional Opportunities

F. 4	Concern Position Country	Extraversion Task Orientation(-)	Horizontal Coordination(-) Teaching Conditions(-) Planning Adequacy(-)	Nil

Promotional Opportunities

F. 3	Nil	Need Achievement(Low) Authoritarianism Self Defensiveness Introversion	Decision Delay(-)	Nil

Factor 4 - Career Aspirations

I. 3 Pos	Position Desired Concern Position Discrepancy	Need Achievement(High)	Idea Receptiveness Information Distortion Promotional Opportunities Structural Rigidity Decision Delay	Decision Delay
I. 6	Concern	Nil	Horizontal Coordination(-) Teaching Conditions(-) Planning Adequacy(-)	Nil
F. 4	Concern Position Country	Extraversion Task Orientation(-)	Horizontal Coordination(-) Teaching Conditions(-) Planning Adequacy(-) Chain of Command(-)	Nil

Factor 5 - Personal Influence

I. 10	ATA	Lie(-)	Idea Receptiveness Information Distortion Promotional Opportunities Structural Rigidity Decision Delay Information Requirements	Information Distortion Structural Rigidity Promotional Opportunities
I. 11	ATA	Introversion Service Orientation(-)	All except Teaching Conditions	Information Distortion Structural Rigidity Idea Receptiveness
F. 5	Nil	Task Orientation(-) Need Achievement (High) Introversion	Horizontal Coordination Information Distortion Idea Receptiveness Structural Rigidity	Nil
I. 14	Nil	Task Orientation	Idea Receptiveness Teaching Conditions Structural Rigidity Planning Adequacy Decision Delay Promotional Opportunities Chain of Command	Idea Receptiveness

3 of 3

since training has been completed. Only 'lack of machiavellianism' and 'number of years of teaching experience' are not significantly correlated with item 15 but are contributing variables to work overload.

What does this mean? Teachers feel stress due to work overload because the job interferes with family life or out-of-school activities. These teachers also perceive that structure is the cause of their problems. Although it is doubtful that even one, rather than a group of teachers, can be found at VCHS who meet the demographic requirements, nonetheless teachers who

> are under thirty years of age; teach in the humanities;
> have taught at VCHS for three to five years;
> do not participate in ATA activities;
> teach because it provides an avenue for self-improvement;
> have not taken 'other training' for more than six years; and
> are single, divorced, or separated

experience the highest stress on this particular dimension. It follows therefore that work overload is at least partly external to the teaching environment.

The high neuroticism, task, and self orientation of these teachers implies an 'excellence' orientation. These personality traits, when coupled with lack of machiavellianism, probably mean that the teacher accepts work readily (or at least is unable to refuse work or manipulate others into doing it), and then must meet his own exacting standards of performance. It appears, therefore, that work overload is attributable to personality, exogenous variables, and to an actual work overload.

Role Ambiguity. Figure 25 shows that four demographic variables--age, concern, sex, and ATA participation--and four personality attributes, high authoritarianism, high task orientation, low neuroticism, and self-criticalness--contribute directly to role ambiguity. High self orienta-

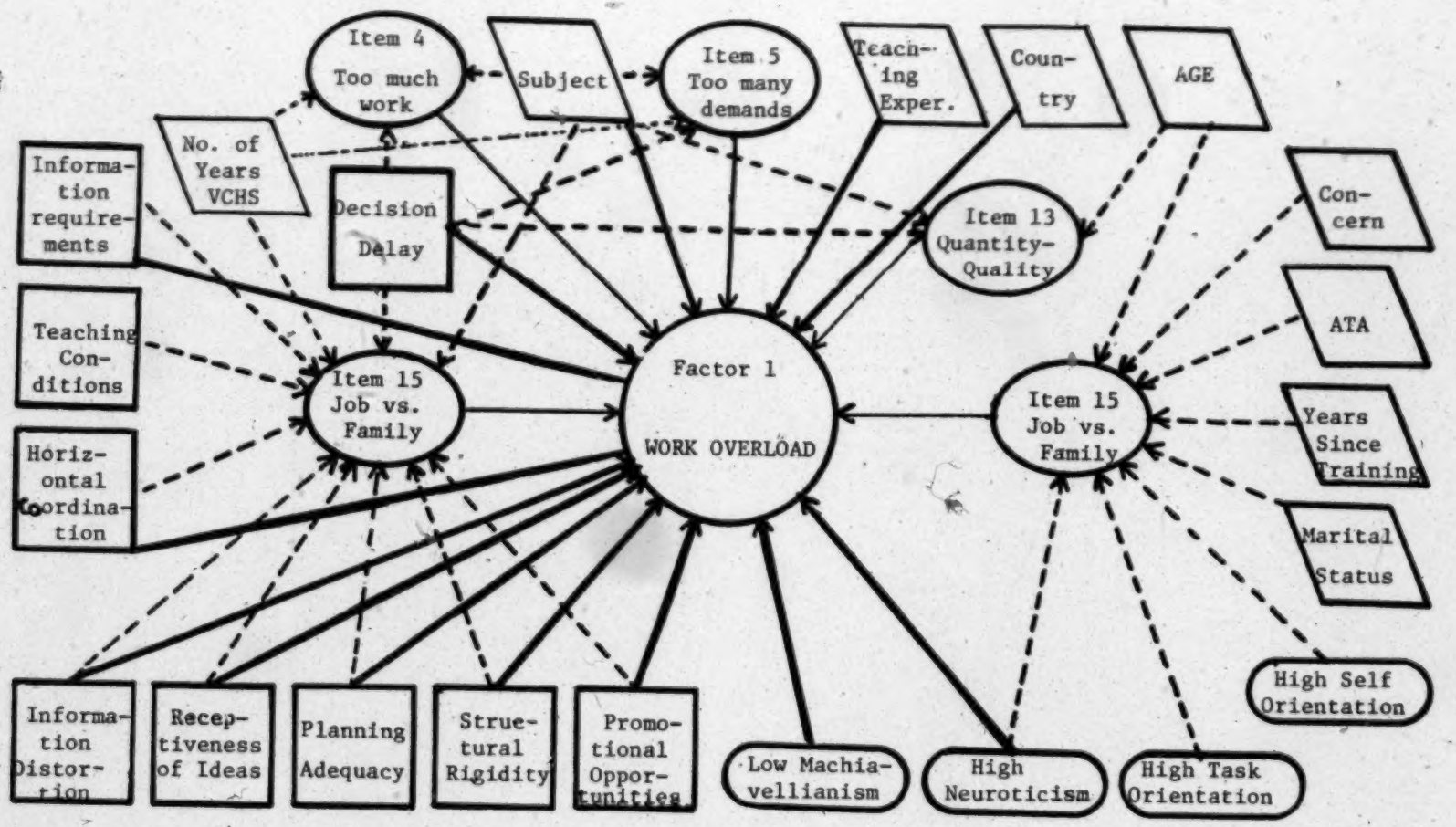

Figure 24

Variables Contributing Significantly
to Stress Attributable to

Factor 1 - Work Overload

tion and need achievement are also contributing variables but rather than working directly on ambiguity, the effect is through items 8 and 12. Additionally, all ten structural practices are highly and significantly correlated with role ambiguity.

The prototype of the teacher who experiences high stress on this factor is that he/she is highly dissatisfied with structure, is least likely to be over fifty years of age, most likely to be between 30 and 40; be female; hold executive positions with the ATA; and be in teaching because it provides her with an opportunity for self-improvement. In addition, she will be rigid, highly task oriented, rather self-critical, and not suffer from neurotic tendencies.

Role Conflict. Figure 26 shows that relatively few variables contribute to stress attributable to role conflict. Components of the role conflict factor are three stress items, namely:

1 have too little authority;
2 unclear about scope and responsibility;
9 worry about decisions that affect others.

Significantly correlated with item 1 is one structural variable--dissatisfaction with idea receptiveness--and four personality attributes--low need achievement, low service orientation, low machiavellianism, and introversion.

In that teachers who have high stress on this item are not service oriented, nor machiavellian, but are introverted, it is possible that the image they project to others is not compatible with their desire for greater authority and more clear-cut responsibility.

The rigid teacher who is under thirty years of age, and who is dissatisfied with information requirements by administrators and with

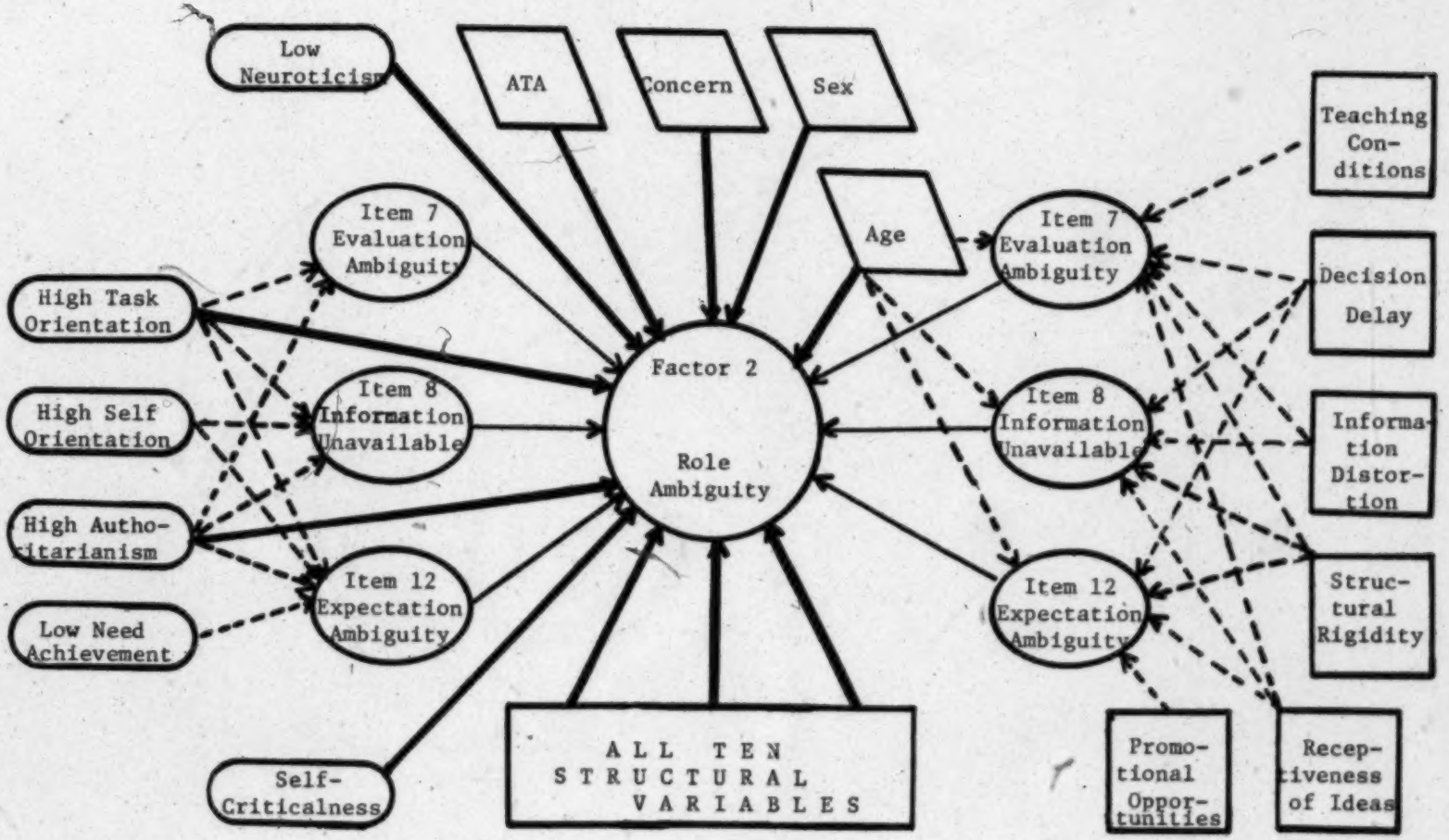

Figure 25

Variables Contributing Significantly to Stress Attributable to Factor 2 - Role Ambiguity

planning adequacy also does not know the scope and responsibility of the job. It is possible that this reflects a personal lack of confidence and a lack of awareness of the extent of professional freedom allowed.

The teacher who experiences stress because he/she is worried that the decisions he makes may affect other people adversely is rigid, concerns himself/herself with subject content, and is dissatisfied with administrative information requirements, with teaching conditions and with the lack of promotional opportunity. This teacher may create problems for himself by his lack of flexibility. These problems may be aggravated if colleagues, students, and 'promotion staff' do not place as great an importance on the dates, names, methods, and details of his particular subject, i.e. if they do not value these 'detail' standards as criteria of good teaching or requirements for good administration.

The three relevant items, therefore, seem to indicate that the teacher who has high role conflict stress lacks self-confidence, is not aware of the extent of his professional freedom, and in that he may have standards and priorities that are not shared by colleagues, may project a self-image that is less favorable than he would desire. Furthermore, he may create problems for himself by his personal rigidity, introversion, and lack of machiavellianism.

That personality is the basis of role conflict stress is confirmed by correlations with that factor: four personality characteristics--low need achievement, high authoritarianism, self defensiveness, and introversion--and a negative correlation with decision delay, are the only significant relationships.

Career Aspirations. Figure 27 indicates that the stress precipitated by career aspirations is a product of two personality attributes, four structural characteristics--teaching conditions, inadequacy of planning,

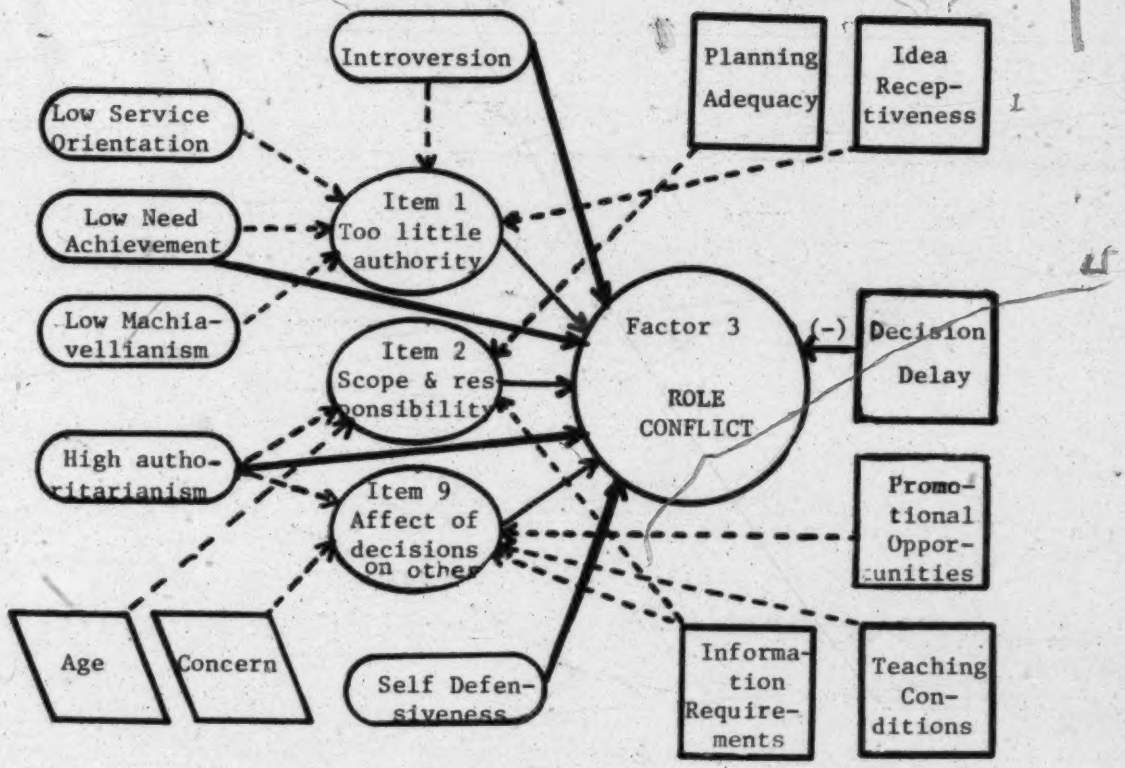

Figure 26

Variables Contributing to the Explanation of

Factor 3 - Role Conflict

chain of command, and horizontal coordination and three demographics. Acting through stress items 3 and 6 are position desired, position discrepancy, high need achievement, and five additional structural variables--decision delay, structural rigidity, lack of promotional opportunity, information distortion, and receptiveness of ideas.[20]

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20. Correlations shown in the illustrations are: between the factors and all variables, $p < 0.10$; between demography and personality and the stress items, $p < 0.10$; between structure and the stress items, figures 24, 25, 27, 28--$p < 0.01$; between structure and the stress items, figure 26, $p < 0.10$.

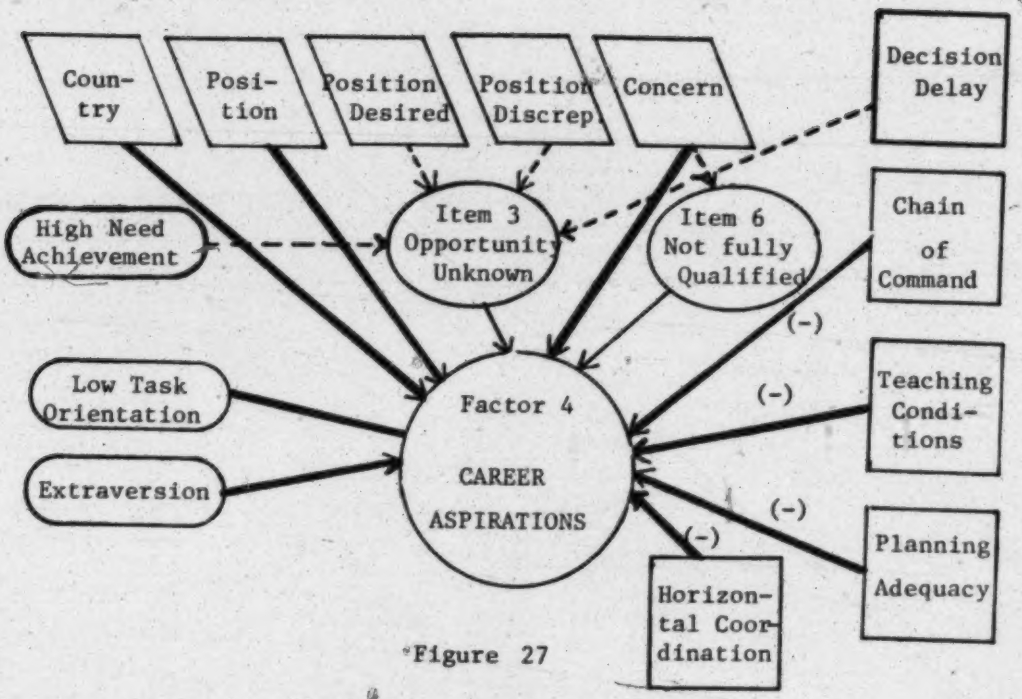

Figure 27

Variables Contributing to the Explanation of

Factor 4 - Career Aspirations

In other words, teachers concerned with methodology or self-improvement are least likely to have high stress for this reason and those who were educated in a province other than Alberta, and are curricular associates, are extraverts, and are not task oriented, are most likely to experience stress attributable to career aspirations. It would appear therefore that demography and structure offer some explanation for high career aspiration stress.

The structural concerns expressed by these teachers when stress levels are high--satisfaction with horizontal coordination, with teaching conditions, with planning adequacy, with chain of command--seem to confirm the curricular associate position--that of the 'man in the middle'.

These teachers possibly attempt to interpret the school situation in its most favorable light--and thus overcompensate in those structural aspects where they feel the greatest problems exist. The large number of departments in widely scattered areas of the school may present liaison problems. Reduced administrative time for curricular associates (and other working conditions) have been affected with the continuing budget restrictions. It may also be necessary for curricular associates to carry through inadequately or externally formulated plans, and be caught in the middle of a chain of command dilemma--without power to enforce the tasks that administration requests and with teachers having direct access to administrators.

It is interesting to note that all four of the structural variables with which factor 4 is significantly correlated are relatively unimportant (quantitatively in a stress items-structure correlation, figure 18). Teaching conditions and planning adequacy appear once each, chain of command and horizontal coordination, not at all. It is therefore possible that the lack of significant correlation on these structural variables for all teachers may be attributable to this particular group, and their 'heightened satisfaction' with these aspects as their stress level precipitated by career aspirations increases. In any event, all teachers do not experience the same satisfaction. At least 11 - 12 (between one-sixth and one-fifth of the group) are 'more than two standard deviations from the mean' dissatisfied with these four aspects of structure (Table XXIII).

Personal Influence. Figure 28 shows that stress precipitated by lack of personal influence is affected directly (at a 0.10 level of significance)

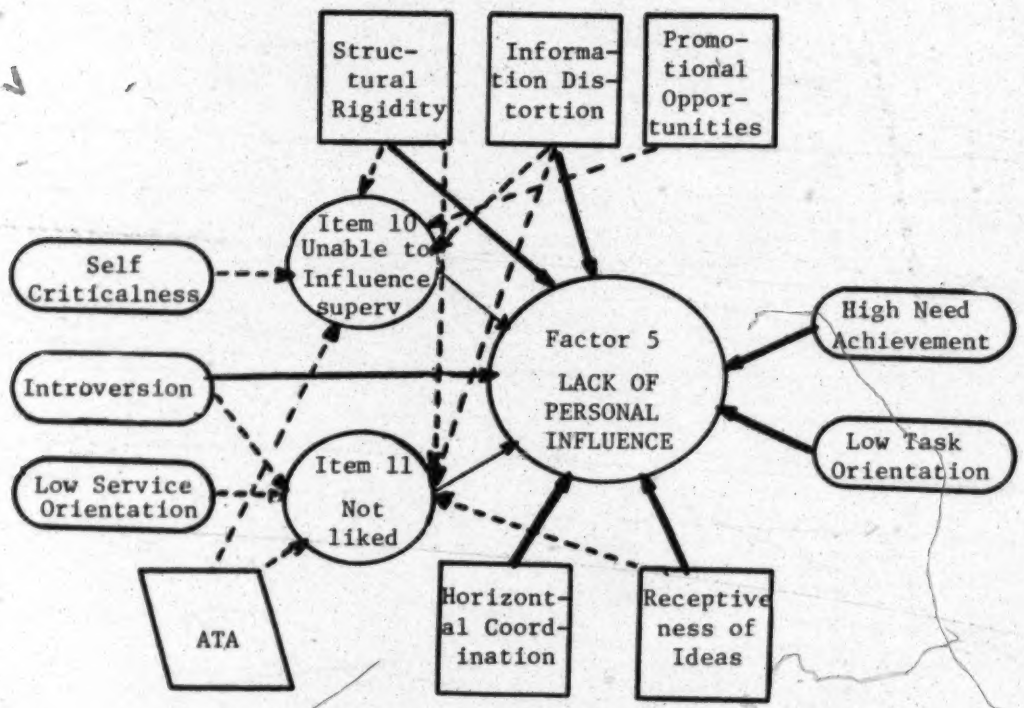

Figure 28

Variables Contributing Significantly
to Stress Attributable to

Factor 5 - Lack of Personal Influence

only by three personality attributes--high need for achievement, low task orientation, and introversion--and four structural variables--structural rigidity, information distortion, horizontal coordination, and receptiveness of ideas. The remaining influence is through stress items 10 and 11, i.e. the teacher feels he may not be liked and accepted by people at work; and that he is unable to influence the supervisor's decisions and actions. Medium level participation in the Alberta Teachers' Association, self criticalness, and low service orientation also affect these two stress items as do all the structural variables except teaching conditions.

It would appear that a self-mitigating problem exists. Stress precipitated by lack of personal influence, resulting at least in part from a high need for achievement, is correlated with an introversion personality attribute. This may suggest that stress is precipitated because others do not validate the perception of self-image these teachers attribute to themselves. The introverted nature of the persons involved would act to widen any perceptual gap that existed. The high correlation of this stress factor with dissatisfaction with horizontal coordination, with receptiveness of ideas, lack of promotional opportunity, structural rigidity and information distortion would tend to confirm this; these variables suggest a lack of opportunity for self-projection.

These relationships between stress, demography, personality, and structure are summarized in Table XXVII.

2. Personality and Structure

Is personality related to perception of structure and/or vice-versa? That this may be so, is indicated by Table XXVIII and Figure 29. Specifically, machiavellianism and lie are negatively correlated[21] with every structural variable; self orientation, positively so. Two other attributes, task orientation and sociability, are correlated positively with nine variables and negatively (but almost at the zero level) with the tenth. This implies that both the high machiavellian and the very self defensive person are happy with the existing structure; the teacher who is highly conscious of social mores and the one who is either task or self oriented are each dissatisfied with existing practices. Conjec-

21. Not all of the correlations are significant. In view of the fact that the probability of all relationships being in one direction is rather high, it was felt that this was worthy of mention.

ture, therefore, of instability in structure might assist in the explanation of the behaviour of these personality types. The manipulator, or the person who is unsure of his behaviour, might find instability a stress reducer in that it would give a chance to manipulate in the first case, and a chance to have self-perceived 'faux pas' go unnoticed in the second.

This is further supported in that those teachers who are task and self oriented, and would want a predictable environment, have increasing stress levels with increasing dissatisfaction with structure. The 'sociable' teacher, i.e. the one high on acceptance of the mores and values of society, would also prefer a stable situation in which the established patterns were maintained.

If these arguments are justified, instability is both a cause of stress and a reducer of stress--the direction in which it moves depending on the sum of the personality of the individual teacher.

In looking at correlations between personality and structure, only five are significant at the 0.05 level: teachers who are high on the neuroticism dimension are dissatisfied with the information distortion; those who have a high regard for established mores are dissatisfied with the lack of administrative receptiveness of their ideas; those that have high task orientation are dissatisfied with conditions in teaching; and high need achievers are satisfied, unaware, etc. of decision delay; those that are highly self-defensive report satisfaction with conditions in teaching, and by corollary, those that are highly self-critical, are also dissatisfied with the same conditions.

Correlations significant at the 0.10 level show that (Figure 29):

(1) Authoritarianism and service orientation are not significantly correlated with any of the structural variables, even at this high level.

TABLE XXVIII

CORRELATION MATRIX

PERSONALITY AND ORGANIZATIONAL STRUCTURE

Victoria Composite High School Teachers

December, 1973

Personality Attributes	Horizontal Coordination	Information Distortion	Upward Information Requirements	Administrative Receptiveness of Ideas	Teaching Conditions	Structural Rigidity	Adequacy of Planning	Delay in Making Decisions	Promotional Opportunities	Chain of Command
Need Achievement	-.001	-.174*	.136	-.036	-.130	-.111	.095	-.247**	-.211*	.020
Authoritarianism	.104	.056	.040	.001	.099	.070	.000	-.088	-.052	.120
Neuroticism	-.047	.259**	.083	-.183*	-.071	.028	.088	.070	.063	.092
Extraversion	-.025	.021	-.081	-.171*	.014	.063	.045	.017	.062	.049
Lie	-.147	-.184*	-.028	-.233*	-.323**	-.190	-.090	-.227*	-.164	-.153
Machiavellianism	-.132	-.135	-.217*	-.135	-.049	-.229*	-.178*	-.148	-.020	-.213*
Sociability	.037	-.004	.131	.292**	.106	.115	.051	.037	.183*	.070
Task Orientation	.089	.072	-.029	.134	.262**	.089	.163	.173*	.150	.055
Service Orientation	.029	-.070	.139	-.023	.008	.108	-.144	-.119	.058	-.036
Self Orientation	.133	.168*	.070	.031	.180	.183*	.064	.106	.099	.143

(2) The low mach[22] is dissatisfied with structural rigidity, or lack of rigidity, with the chain of command, upward information requirements, and with planning inadequacy. The high mach, presumably, prefers these conditions;

(3) Self defensive teachers are not aware or are not dissatisfied with conditions in teaching, with decision delay, with administrative receptiveness of ideas, and with information distortion. By corollary, the self-critical teacher is dissatisfied with these same conditions. It is possible that the 'self criticalness' of this teacher extends to a critical analysis of the school organization also;

(4) The high need achiever finds dissatisfaction with decision delay, information distortion, and/or with the lack of promotional opportunity;

(5) The task oriented teacher is dissatisfied with decision delay, with teaching conditions.

(6) Other significant correlations include:

Self orientation and structural rigidity;
Self orientation and information distortion;
Neuroticism and information distortion;
Neuroticism and administrative receptiveness of ideas;
Introversion and administrative receptiveness of ideas;
Sociability and administrative receptiveness of ideas; and
Sociability and lack of promotional opportunity.

What are the characteristics of the individual who expresses a dissatisfaction with each of the existing structural components? Since none of the correlations are at the 0.10 or lower significance level,

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22. The reader is reminded that a significant correlation did not exist between authoritarianism and machiavellianism.

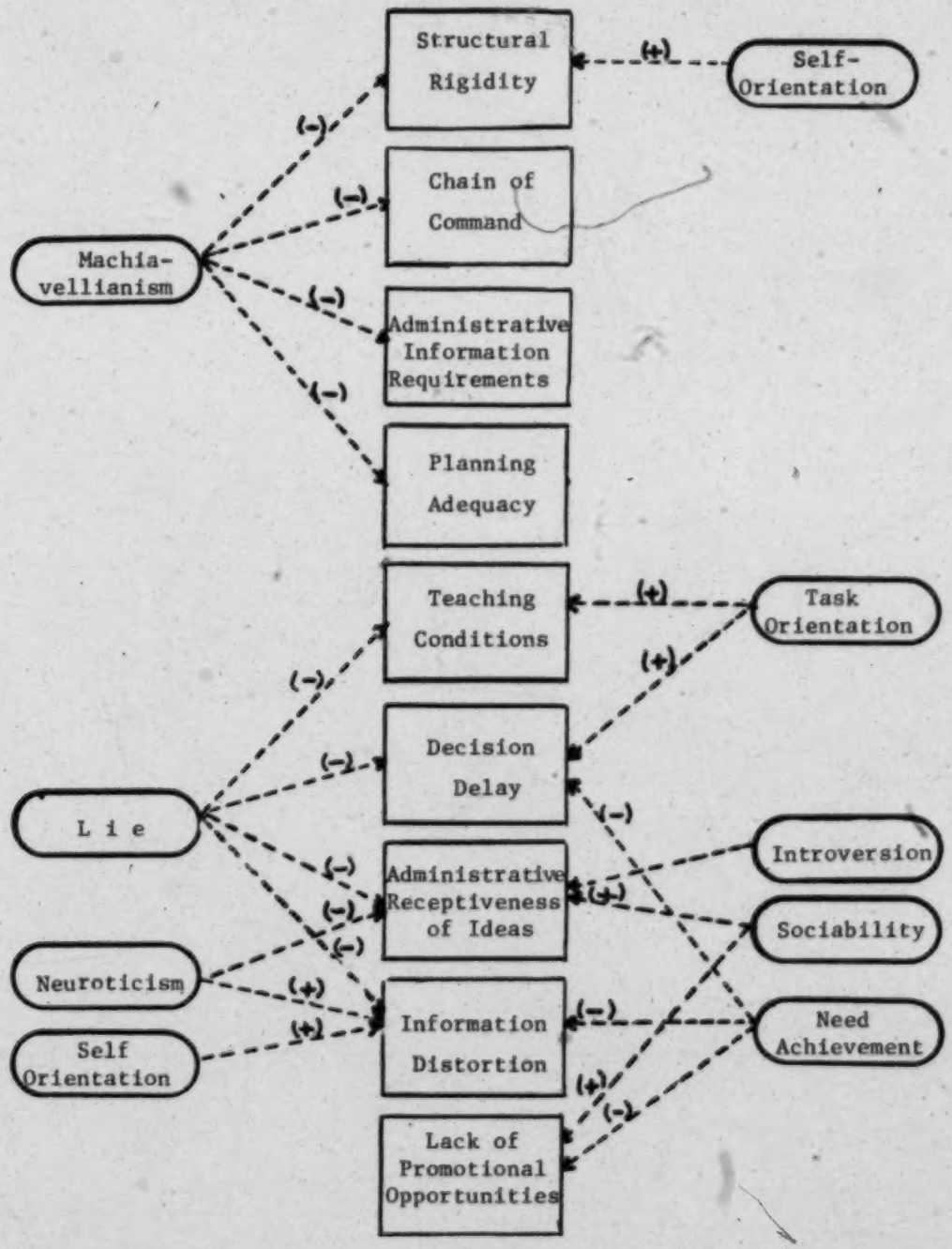

Figure 29

Significant Correlations Between Personality and Structure

it would seem that dissatisfaction with horizontal coordination is not a function of the personality characteristics examined.

Teachers who are high in need achievement, high on the neuroticism measurement, who are self critical and self oriented are more aware or dissatisfied than others with information distortion.

Dissatisfaction with administrative receptiveness of ideas is highest with those teachers who are self-critical, introverted, emotionally stable and who especially have a high regard for existing mores and values. Teachers who are self critical and task oriented and are also high in need achievement are also dissatisfied with delays in decision announcements; those who are significantly high on sociability and need achievement are dissatisfied with the lack of knowledge of promotional opportunities.

Upward information requirements, the existing chain of command, with the rigidity or lack of rigidity of structure, and with lack of planning adequacy are all significantly correlated with machiavellianism. Also, those who are dissatisfied with the rigidity of structure are highly self oriented.

The last of the structural variables, dissatisfaction with teaching conditions, is related to the task orientation and self criticalness of the teacher.

It would, at this stage, appear that the personality of the individual determines whether or not stress will result under different structural conditions.

3. Partial Correlations

In view of the findings of the previous section that personality appears to influence whether or not a teacher experiences high stress under each of the different structural conditions, an attempt to partial out the effects of personality was in order. The technique of partial correlation measures the net effects of an independent variable upon a dependent variable when other specified variables are held constant. In this case, it measures the net effects of each of the ten aspects of structure studied, on each of fifteen stress items after partialing out the effects of the ten personality attributes and three demographic variables.

These correlations were examined by comparing them to those previously obtained in Table XXV by two methods:

(1) by items which changed from being significant to non-significant and vice-versa (Table XXX); and

(2) the magnitude of the change (Table XXXI).

Significant correlations. Table XXX shows that of the 150 possible correlations, fifteen had been significant, at the $p \leq 0.10$ level, previous to partialing out personality but had been deleted following this statistical procedure. Seven others were non-significant but became so following partial correlation. These are shown in Table XXX and are:

Horizontal coordination and items 4, 7, 8, 12 (deleted);
Information distortion and items 4, 12, 13 (deleted) and 2 (added);
Information requirements and item 14 (added);
Idea receptiveness and item 1 (deleted) and item 9 (added);
Teaching conditions and items 14, 8 (deleted) and items 3, 10 (added);
Planning adequacy and items 2, 4 (deleted) and 9 (added);
Promotional opportunities and item 1 (added);
Chain of command and item 12, 14 (deleted);
Decision delay and item 14 (deleted).

TABLE XXIX

PARTIAL CORRELATION MATRIX RELATING STRESS ITEMS WITH STRUCTURAL VARIABLES**

AND PARTIALING OUT THE EFFECTS OF

PERSONALITY, AGE, EXPERIENCE, AND ATA PARTICIPATION

As Reported by VCHS Teachers

December, 1973

Structural Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Coordination	-.021	0.074	0.042	0.100	0.183	-.219	0.126	0.110	0.052	0.151	0.231	0.154	0.104	0.105	0.259*
Info. Distortion	-.011	0.225	0.310*	0.156	0.259*	-.060	0.387*	0.451*	0.056	0.351*	0.503*	0.163	0.123	0.115	0.545*
Info Requirements	0.049	0.284*	0.129	0.282*	0.405*	-.083	0.402*	0.436*	0.292*	0.302*	0.226	0.438*	0.293*	0.257*	0.576*
Idea Receptiveness	0.086	0.121	0.280*	0.238	0.327*	0.056	0.462*	0.331*	0.168	0.193	0.438*	0.370*	0.326*	0.321*	0.577*
Teach Conditions	-.077	-.043	-.202	0.086	0.023	-.232	0.380*	0.165	0.219	-.172	0.023	0.278*	0.068	0.156	0.534*
Structural Rigidity	0.005	0.152	0.223	0.203	0.283*	-.079	0.392*	0.493*	0.121	0.396*	0.481*	0.356*	0.225	0.324*	0.628*
Planning Adequacy	0.024	0.143	0.058	0.109	0.210	-.196	0.201	0.416*	0.178	0.075	0.181	0.244	0.096	0.249*	0.631*
Decision Delay	-.093	0.039	0.359*	0.306*	0.353*	-.111	0.419*	0.469*	0.139	0.279*	0.331*	0.318*	0.279*	0.139	0.647*
Promotional Oppor.	0.335*	0.154	0.270*	0.331*	0.368*	0.045	0.343*	0.464*	0.317*	0.481*	0.331*	0.505*	0.298*	0.319*	0.487*
Chain of Command	-.042	-.034	-.013	-.048	0.064	-.149	0.102	0.043	0.035	0.040	0.171	0.114	-.005	0.141	0.251*

In other words: High stress measured by item 4--too heavy a work load--is no longer a function of dissatisfaction with horizontal coordination, information distortion, or planning adequacy. The high stress measured by item 12--not know the expectations of fellow workers--is not related to dissatisfaction with information distortion, with chain of command, or horizontal coordination; and the high stress attributable to item 14--having to do things against one's better judgment--is not correlated with teaching conditions, decision delay, or chain or command.

Item 8--unable to get information needed--is also influenced by personality: Horizontal coordination and teaching conditions are no longer significant.

In addition to the above, seven other combination of stress items and structural variables were added (Table XXX). Of the seven, two affected stress item 9. Stress items 1, 2, 3, 10, and 14 were also added.

When the effects of personality are partialed out, item 9--worry about decisions that affect others--is significantly correlated with idea receptiveness and planning adequacy. Also after partialing, stress attributable to item 3--not know opportunity for advancement--and item 10--not liked and accepted by colleagues--is significantly correlated with teaching conditions.

These correlations would point to the fact that personality and not the structural variable involved is the precipitator of stress in the fifteen different situations above mentioned. The structural variable is more important as a precipitator of stress, after partialing out the effects of personality, in the other seven relationships.

In summary, Table XXX indicates that personality has an effect on only a small number of the 150 possible relationships, particularly if Table XXX is interpreted together with the findings of Table XXXI.

TABLE XXX

STRESS DUE TO STRUCTURE

BEFORE AND AFTER PARTIALING OUT THE EFFECTS OF PERSONALITY

AND SELECTED DEMOGRAPHIC VARIABLES

As Reported by Teachers at VCHS

December, 1973

Structural Variables	Significant Stress Items: Before Partialing Out Personality, etc. Effects	After Partialing Out Personality, etc. Effects	Items Dropped	Items Added
Horiz. Coordination	4 5 6 7 8 11 12 15	5 6 11 15	4 7 8 12	Nil
Information Distortion	3 4 5 7 8 10 11 12 13 15	2 3 5 7 8 10 11 15	4 12 13	2
Information Requirements	2 4 5 7 - 13 15	2 4 5 7 - 15	Nil	14
Idea Receptiveness	1 3 4 5 7 8 10 - 15	3 4 5 7 8 9 10 - 15	1	9
Teaching Conditions	6 7 8 9 12 14 15	3 6 7 9 10 12 15	8 14	3 10
Structural Rigidity	3 4 5 7 8 10 11 12 13 - 15	3 4 5 7 8 10 11 12 13 - 15	Nil	Nil
Planning Adequacy	2 4 5 6 7 8 11 12 14 15	5 6 7 8 9 11 12 14 15	2 4	9
Decision Delay	3 4 5 7 8 10 - 15	3 4 5 7 8 10 11 12 13 15	14	Nil
Promotion Opportunity	3 4 5 7 - 15	1 3 4 5 7 - 15	Nil	1
Chain of Command	11 12 14 15	11 15	12 14	Nil

4. Magnitude of the Difference Between Correlations

In view of the fact that one of the purposes of this study is to suggest relationships that might exist, and be worth testing in future studies, and in view of the fact that some of the correlation coefficients changed their sign, another technique is used to compare the correlation coefficient relating stress and structure, before and after the effects of personality are partialled out. This involves a simple subtraction of the two coefficients and gives the absolute magnitude of the change that occurred.[23]

The two items, planning adequacy, and delay in decision making, do not appear in Table XXXI. This means that for these two aspects of structure, when the effects of personality on structure and stress are partialed out, no change in correlation, at least as large as 0.10, results. It follows that personality has no influence on the relationship between each of the 15 items of stress and these two structural variables.

Personality, does, however, act as a modulator of stress attributable to upward information requirements, teaching conditions, and promotional opportunities. When the effects of personality are partialled out, the stress measured by items

5 Think not able to satisfy conflicting demands;
7 Not know how supervisor evaluates performance;
8 Unable to get information needed to carry out responsibilities;
10 Not liked and accepted by people at work;
12 Not know what people expect;
13 Quantity of work interferes with quality
14 Feel that must do things against one's better judgment;
15 Job interferes with family and other interests

and dissatisfaction with upward information requirements is increased in magnitude.

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23. The problem of 'before' and 'after' correlations does not appear to have been an issue in research studies previously. In any event, no techniques appear to exist for comparing these relationships.

TABLE XXXI

DIFFERENCES IN EXCESS OF 0.10 BETWEEN STRESS AND STRUCTURE COMPUTED BY SUBTRACTING STRESS AND STRUCTURE CORRELATIONS BEFORE AND AFTER PARTIALLING OUT EFFECTS OF PERSONALITY***

As Reported by Teachers at VCHS

December, 1973

Structural Variable	Stress Items 1	2	4	5	7	8	10	12	13	14	15
Horizontal Coordination						-.118*		-.118*			
Information Distortion			-.101*			+.101					
Information Requirements				+.135	+.152	+.193	+.112	+.209	+.112	+.103	+.229
Idea Receptiveness											+.153
Teaching Conditions	-.148			-.106			-.174**				+.199
Structural Rigidity						+.135					+.136
Promotional Opportunity	+.218	+.104		+.128		+.152	+.158				
Chain of Command	-.135		-.108			-.109					

*Also appears as a dropped item, table XXX.
**Appears as an added item, Table XXX
***A negative sign signifies a drop following before and after comparisons; a positive sign signifies an increase.

Correlations between each of items

1 Have too little authority to carry out responsibilities;
2 Feel unclear about scope and responsibility of job;
5 Not able to satisfy conflicting demands;
7 Not know how supervisor evaluates performance;
8 Unable to get information needed to do the job

and lack of promotional opportunity are also increased when the effects of personality are partialed out.

It can be concluded therefore that in both the case of upward information requirements and lack of promotional opportunity, more teachers have significantly greater dissatisfaction levels than originally indicated.

Stress precipitated by dissatisfaction with conditions within teaching and also measured by items

1 Too little authority to fulfill required responsibilities;
5 Not satisfy conflicting demands; and
10 Not being liked and accepted by people at work

is decreased when the effects of personality are partialed out. That measured by item 15--work interferes with family life and out of school activities--is increased. Of this group, the teaching-conditions-item-10 combination appears in both Table XXX and XXXI, i.e. it changes after partialing, by at least 0.10 and from being non-significant to significant (in a negative direction). In other words: the less stress that the teacher experiences because he is unable to influence his supervisor, the higher will be his dissatisfaction with teaching conditions, after the effects of personality have been removed. This relationship might suggest that a lack of contact or opportunity of contact for the teacher with his supervisor exists. The problem may revolve around the issue of whom the teacher regards as his supervisor--the curricular associate, the assistant principal in charge of his area, or indeed, a supervisor from

the School Board offices (Central office, See Appendix K for organizational chart).

The decrease in correlation between teaching conditions and items 1 and 5 would suggest that teachers with high stress on these two items are less dissatisfied with teaching conditions than they indicate (or that fewer teachers are so strongly dissatisfied). The complaints of at least some of these teachers can, therefore, be attributed to their personalities.

The correlations between stress measured by item 15--work interferes with family and outside activities--and four items of structure: upward information requirements, administrative receptiveness of ideas, teaching conditions, and strucutral rigidity; and those between item 8--unable to get information needed to carry out the job--and information distortion and structural rigidity, also increase and remain significant, when the effects of personality are partialed out. Personality has an opposite effect, however, on the correlations between horizontal coordination and

items 8 Unable to get information needed to do the job;
12 Not know what people expect;

and on information distortion and item 4--feel that have too heavy a work load; and on chain of command and items

1 Have too little authority to carry out responsibilities;
4 Have too heavy a work load;
8 Unable to get information needed to do the job.

In each case, the high stress on the particular item in question is precipitated more by the personality attributes of the teacher than the structural variable under consideration, especially in the case of horizontal coordination and information distortion. The correlations relating these items and the structural variables do not continue to be significant.

The findings of this section are that the effects of personality on dissatisfaction of structure, as determined by the partial correlation technique, are minimal. Of the twenty-two correlations which change in significance before and after partialing out personality (shown in Table XXX), eighteen are of a magnitude which is smaller than 0.10. It would seem that, in these cases, the personality of the teacher acts as a suppressant to expression of a greater level of dissatisfaction. Of the twenty-seven correlations which increase or decrease by at least 0.10, four (the same four as above) change from being significant to non-significant or vice-versa. Three: items 8 and 12 and horizontal coordination and item 4 and information distortion decrease, and become non-significant. Only one pair--item 10 and teaching conditions--increases in magnitude (negatively) and becomes significant after partialing out the effects of personality.

The findings of this section, therefore, confirm those previously ascertained (figures 24 to 28): stress precipitated particularly by role ambiguity and work overload, and to a lesser extent, by lack of personal influence, is also attributable to the structure within which VCHS teachers find themselves and is not merely a product of the teachers' personalities.

4. Conclusion

It would seem that the three batteries of variables, are each independent causal components of stress, i.e. there is no evidence in this study that stress precipitated by structure is attributable exclusively to personality and thereby, a product exclusively, of an individual's perception of the existing conditions. Instead this study shows that

level and type of stress experienced will depend on all three batteries. The hypothesis advanced earlier that stress will result when there is an incompatibility between perceived and prescribed role appears to be substantiated.

5. Summary

This section relates stress to the three batteries of characteristics studied--demographics, personality, and structure. Additional findings include:

(1) One stress item contributes the greatest amount of explanation for the stress that is precipitated because of work overload. This teacher's greatest misgiving is that the job will interfere with family life and out-of-school activities. His own character and personality, which demands an excellence in performance, together with his reluctance to manipulate others into doing some of the work, aggravates this problem. When the effects of personality are partialed out, teachers high on work overload continue to be dissatisfied with every aspect of structure, findings previously obtained and illustrated in Figure 24.

(2) Stress precipitated by role ambiguity is highest with teachers who are authoritarian, task oriented, and self-critical. This intolerance of ambiguity of authoritarians has been previously supported in the findings of Millon (1959), Budner (1962), and Getzels and Guba (1955);

Demographically, a certain type of teacher is much more likely to score high on role ambiguity stress indices, i.e. a female between 30 and 40 years of age, who holds executive ATA positions, and whose chief concern in teaching is self-improvement.

Furthermore, teachers who are high on role ambiguity stress have high dissatisfaction levels on all aspects of structure.

(3) Stress precipitated by role conflict appears to be almost entirely a function of personality. The teacher who experiences highest conflict stress claims a low need for personal achievement and is inflexible and introverted. He may feel reservation about expressing his own achievement needs and regarding the behaviour and attitudes of others. The introversion attribute is probably also responsible for the reported lack of dissatisfaction with structural variables. Conflict stress is however negatively correlated with decision making. This might suggest that these teachers prefer a 'no decision' situation.

(4) Stress precipitated by career aspirations is attributable particularly to demography and structure. Teachers who are curricular associates, who were born in other Canadian provinces, are also low in task orientation and are extraverts, have a tendency to have high stress on this factor. These teachers are especially satisfied with teaching conditions, planning adequacy, horizontal coordination, and the chain of command. This feeling of satisfaction, however, is not shared by at least a fifth of the remaining teachers.

A dissatisfaction with lack of administrative receptiveness of ideas, with structural rigidiity, with information distortion, decision delay, and with lack of promotional opportunities is reflected in stress due to feelings that the teacher will not be liked and accepted by colleagues and that he will be unable to influence his supervisor's decisions;

(5) Teachers who have high stress precipitated by a lack of personal influence have at the same time a high need for achievement and low task

orientation. They are dissatisfied with four aspects of structure--structural rigidity, information distortion, horizontal coordination, and receptiveness of ideas;

(6) Teachers who are unsure of themselves and those who like to manipulate others, prefer a changing environment; teachers who are self oriented, task oriented, or are high on acceptance of social mores and values, prefer, at least a stable, if not static, environment;

(7) When partial correlation was used to measure the net effects of structure, on stress, after partialing out the effects of personality, some evidence that personality did have a dampening effect on dissatisfaction of structure was present. On the whole, however, most of the structure-stress correlations remained unchanged.

IV. SUMMARY AND CONCLUSIONS

A. FINDINGS

In this exploratory study, the attempt to look for underlying variables that might precipitate stress has, at times, because of small samples, constraints, etc. led to postulations and conclusions that are only partially supported by the data; these findings do however reflect a directional trend and provide hypotheses which future research might investigate.

The major findings are given in this summary; a more complete analysis is given at the conclusion of each of the sections, as follows: findings concerning the stress variables and stress factors are given on pages 61 and 62; concerning stress and demographic variables, pages 86 and 87; stress and personality, pages 103 and 104; stress and structural variables, pages 124 to 126; stress and the above three batteries of variables, pages 156 to 158.

(1) A comparison with Rogers' and Jobson's study (1974, see appendix J) of stress with a group of senior management personnel surveyed at the Banff School of Management revealed that teachers were significantly higher on stress because of work overload. Business management personnel, however, felt that they were not fully qualified to handle their job.

A comparison with the Kahn et al (1964) national survey indicates that the mean of all fifteen stress items in this study (2.5) is higher than that ascertained by Kahn (2.0).

(2) Generally, the variables that produce the greatest level of stress for teachers at Victoria Composite High School are items 4, 9, and 13, specifically: teachers feel that they have too heavy a work load, they worry about making decisions that will affect others, and they think that the amount of work they have to do may interfere with how well it is done.

Very few teachers experience high stress because of items 6, 10, or 12, i.e. because of a feeling that they are not qualified for the job, a feeling that they may not be liked and accepted by people at work, or because of uncertainty as to what people expect of them.

(3) The fifteen stress items examine five stress areas, as follows: work overload (items 4, 5, 13, and 15), role ambiguity (7, 8, and 12), role conflict (1, 2, and 9), career aspirations (3 and 6), lack of personal influence (10 and 11).

(4) One-third of teachers at Victoria Composite High School experience significantly high stress on at least one of these five factors.

(5) Teachers whose stress score is high on the work overload factor possess the following characteristics: are more likely to be teaching in the humanities, have most likely been at VCHS for less than five years, are less likely to be presently married, tend to feel that the quantity of work interferes with their family and with out-of-school activities, tend to demand an excellence of performance in their own work, are more likely to be reluctant to manipulate others into doing some of their work, are generally dissatisfied with every aspect of structure within the organization. Furthermore, as teachers get older they tend to experience less strain which is precipitated by work overload.

(6) Stress precipitated by role ambiguity is highest among: women, those who are between 30 and 40 years of age, those who hold executive

ATA positions; those who are interested in their own self-improvement; authoritarians, and task oriented, and self critical teachers; those who are extremely dissatisfied with structure. Even when the effects of personality are partialed out, teachers with high scores on role ambiguity continue to have high dissatisfaction levels on all aspects of structure.

(7) Stress precipitated by role conflict appears to be almost entirely a function of personality. The teacher who experiences highest stress on this factor reports that he requires a low level of personal achievement, is inflexible, an introvert, and is highly self-defensive. He does not appear to be dissatisfied with structure except when there is no delay in decision making. Although this sample was not sufficiently large to isolate the effects of specific personality variables, it is very likely that this teacher suppresses his true feelings.

(8) The teacher who has highest stress levels attributable to career aspirations is most likely to be a curricular associate, be educated in a province other than Alberta, have as dominant personality traits low task orientation, and be an extravert. The higher the stress level of the teacher on this factor, the more likely is he to be satisfied with four aspects of structure--teaching conditions, planning adequacy, chain of command, and horizontal coordination. Other teachers do not, however, share these feelings of satisfaction.

(9) Teachers who have high stress because of a lack of personal influence appear to have a high self-image but probably do not project this image to supervisors and colleagues since the dominant personality characteristics--low task orientation, introversion, and high need for achievement--would tend to aggravate rather than improve the self-image

problem. Four structural variables significantly affect this type of stress--structural rigidity, information distortion, horizontal coordination, and receptiveness of ideas.

(10) All three batteries of variables are related to stress. It appears that the model presented at the beginning of this study 'that demographic characteristics of the individual and the structural aspects of the organization will affect the role and the manner in which that role is prescribed and that demography and the personality of the individual will, in turn, affect the type of role he perceives himself fulfilling. When an incompatibility between a prescribed role and a perceived role exists, stress results' is substantiated.

B. LIMITATIONS OF THE STUDY

This study has the following limitations:

(1) The sample used is not a randomly selected one. This study is the analysis of a sample of the teaching staff at Victoria Composite High School at a specific point in time, December, 1973. Whether conditions are similar in that high school at the present time or in other Edmonton high schools is a matter of conjecture. No general conclusions for teaching populations or other high schools are drawn within this particular study;

(2) By using an industrially and nationally well-known stress index, a comparison between other industrial groups and VCHS teachers can be made on the fifteen items in question. This is not an assurance that these items correctly pinpoint the stress problem within the school. The interview and scale construction technique might have provided a more teaching oriented scale;

(3) In view of the fact that some of the instructions on the questionnaires were ambiguous and examples showing how the questions were to be answered had been inadvertently omitted, the validity of the answers received may have been prejudiced;

(4) The literature shows that the mean scores of females differ from that of males in need achievement, machiavellianism, and sociability. This was ignored in this study and may have prejudiced results;

(5) It is possible that combinations of personality attributes, such as need achievement, machiavellianism, and extraversion might combine to produce a particularly high or low stress on a specific factor. While analysis did reflect the interaction of these combinations, larger

sample size may have provided the opportunity to isolate specific combinations of relationships and to examine through analysis of variance the 'treatment' effect of various subsets;

(6) Three different computer statistical program packages were used to analyze the data: statistical package for the social sciences (SPSS), Division of Educational Research (DERS), and Cornell University's package (ECON). The three are compatible when there is independence among the variables within a specific battery. When lack of independence is present, particularly if correlations among the battery items are in a low significance range ($0.10 \leq p \leq 0.01$), the three programs select variables that will be used in the 'enter' and 'deletion' process for the calculations in a slightly different manner.[24]

A second problem was present because of the difference in accepting input data by the different statistical programs. This was in the deletion of information that would be used in computation. SPSS allows for pairwise and listwise deletion; DERS, particularly, does only listwise deletion; ECON, pairwise deletion. In view, however, of the fact that considerable loss of data would result, especially at those times when not only the fifteen stress items, but also ten personality attributes, ten structural variables and selected demographic data, or dummy equivalents, were being used in one analysis, listwise deletion was not practical.

This lack of compatibility, although slight, might well have caused some misrepresentation of data--particularly in the area of personality.

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24. Source of information: Mr. Dan Precht and Mr. Ray Weingard, Computing Science Department Consultants, University of Alberta Computing Services.

C. SUGGESTIONS FOR RESEARCH

Research might include the following topics:

(1) There is always the danger, particularly in using structure scales that have been validated previously on the particular job-tension index used, that the results have been prejudiced in the direction desired. Further research should therefore determine if the use of the two particular scales precluded that 'perception' of one's role would not be an important aspect of stress;

(2) Although the Sherwood (1964) test did measure a need achievement variable, this dimension should be broken into more components as suggested by Hermans (1970, see Appendix D) and these examined per se in a stress relationship;

(3) There is, within this study, some suggestion of different high stress factors between status and expertise oriented teachers. Further investigation would be warranted.

(4) Literature has shown that fear of failure, self-image, and intelligence are as important causal variables of stress as need for achievement. There is some evidence in this study to substantiate this. Further research connecting these components is necessary, as is that distinguishing between high need achievement and high value achievement (Burnstein, 1963).

(5) That work overload is a subjective rather than objective assessment was not borne out in this study. This study however did not address itself directly to this subject. The effects of work underload or perceived work underload were also not studied but warrant investigation.

(6) Sufficiently large samples so that the effects of many personality variables--introversion vs. extraversion, self-criticalness vs. self-defensiveness, etc. could be controlled, in an attempt to eliminate counterbalancing effects, would be preferred.

D. CONCLUSION

This study was concerned with identifying precipitators of stress among teachers in a large composite high school. Its findings include that the personality attributes, the structural variables, and the demographic data pertinent to each teacher accentuate or decrease stress in five areas: work overload, role ambiguity, role conflict, career aspirations and lack of personal influence.

The existence of stress however cannot be termed a debilitating factor in total. While it is true that when an individual is subjected to excess quantities of stress, his observable capabilities and performance may decrease; it is also true that a certain level of stress is needed to achieve the goals of any organization. The issue, then, is not the elimination of stress from organizational life but

> . . . the containment of these conditions at levels and in forms which are at least humane, tolerable and low in cost, and which at best might be positive in contribution to individual and organization. (Kahn et al, p. 423).

How this change in structure, in increasing the tolerance and coping abilities of individuals, and in strengthening the interpersonal bonds among organizational members is achieved is the challenge that faces the administration and staff at that high school.

BIBLIOGRAPHY

Adams, G. Workers on Relief. New Haven: Yale University Press, 1939.

Akhtar, Syed N. and S. K. Kafiluddin. Relationship among neuroticism, extraversion and manifest hostility. Manas, 1971, 18(1): 37-44.

Alexander, Franz. Psychosomatic medicine, its principles and applications. New York: W. W. Norton and Co., 1950.

Argyris, C. Integrating the individual and the organization. New York: Wiley, 1964.

Argyris, Chris. Personality and organization. New York: Harper & Brothers, 1957.

Barron, Charles I. Stress and executive health. Management World, 1973, 2, II: 4-8.

Baldamus, W. Type of work and motivation. British Journal of Sociology, 1951, 2(3): 44-58.

Bass, B. M. Authoritarianism or acquiescence? Journal of Abnormal and Social Psychology, 1955, 51: 616-623.

Basowitz, Harold and Sheldon J. Korchin, and Roy R. Grinker. Anxiety in a life stress. Journal of Psychology, 1958, 38(2): 503-510.

Berlyne, D. E. Conflict, arousal and curiosity. New York: McGraw-Hill, 1960.

Block, Jack and Jeanne Block. An investigation of the relationship between intolerance of ambiguity and ethnocentrism. Journal of Personality, 1951, 19: 303-311.

Block, Jack and Jeanne Block. An interpersonal experiment on reaction to authority. Human Relations, 1952, 5: 91-98.

Bogart, Karen, Florence Geis, Marguerite Levy, and Philip Zimbardo. No dissonance for machiavellians. In Richard Christie and Florence L. Geis (eds.), Studies in machiavellianism. New York: Academic Press, 1970.

Boulding, Kenneth E. Conflict and defense. New York: Harper and Brothers, 1962.

Bruckman, Idel R. The relationship between achievement motivation and sex, age, social class, school stream and intelligence. British Journal of Social and Clinical Psychology, 1966, 5: 211-220.

Buck, V. E. Job pressures on managers, sources, 'subjects and correlates'. Ph.D. dissertation, Cornell University, 1963.

Buck, Vernon. Working under pressure. New York: Crane, Rusnak & Company, Inc., 1972.

Budner, S. Intolerance of ambiguity as a personality variable. Journal of Personality, 1962, 30: 29-50.

Burgoon, Michael, Gerald R. Miller and Stewart L. Tubbs. Machiavellianism, justification and attitude change following counterattitudinal advocacy. Journal of Personality and Social Psychology, 1972, 22(3): 366-371.

Burnstein, E. Fear of failure, achievement motivation and aspiring to prestigeful occupations. Journal of Abnormal Social Psychology, 1963, 67: 189-192.

Burnstein, E.; R. Moulton and P. Liberty, Jr. Prestige vs excellence as determinants of role attractiveness. American Sociological Review, 1963, 28: 212-218.

Cartwright. Dorwin and Alvin Zander. Group dynamics: research and theory, Third edition. New York: Harper & Row, 1968.

Christie, Richard and Virginia Boehm. Machiavellians meet Miss Rheingold. In Richard Christie and Florence L. Geis (eds.), Studies in Machiavellianism. New York: Academic Press, 1970.

Christie, R. and Peggy Cook. A guide to published literature relating to the authoritarian personality through 1956. Journal of Psychology, 1958, 45: 171-199.

Christie, Richard and Florence L. Geis. Studies in Machiavellianism. New York: Academic Press, 1970.

Coch, Lester and John R. P. French, Jr. Overcoming resistance to change. Human Relations, 1948, 1: 512-532.

Colquhoun, W. P. and D. W. J. Corcoran. The effects of time of day and social isolationoon the relationship between temperament and performance. British Journal of Social and Clinical Psychology, 1964, 3: 226-231.

Craske, S. A study of the relations between personality and accident history. British Journal of Medicine and Psychiatry, 1968, 41(4): 399-404.

Davies, D. R. and G. R. J. Hockey. The effects of noise and doubling the signal frequency on individual differences in visual vigilance performance. British Journal of Psychology, 1966, 57: 381-389.

Dohrenwend, Bruce P. The social psychological nature of stress. Journal of Abnormal and Social Psychology, 1961, 62(2): 294-302.

Drabek, Thomas E. and J. Eugene J. Haas. Laboratory simulation of organizational stress. American Sociological Review, 1969, 34(2): 223-228.

Dunbar, H. F. Mind and body. New York: Random House, 1947.

Duncan, Robert B. Characteristics of organizational environments and perceived environmental uncertainty. Administrative Science Quarterly, 1972, 17(3): 313-327.

Eisenberg, P. and P. F. Lazersfeld. The psychological effects of unemployment. Psychological Bulletin, 1938, 35: 358-390.

Epstein, Gilda F. Machiavelli and the devil's advocate. Journal of Personality and Social Psychology, 1969, 11: 38-41.

Erickson, Jeanne M., William M. Pugh, and E. K. Eric Gunderson. Status congruency as a predictor of job satisfaction and life stress. Journal of Applied Psychology, 1972, 56(6): 523-525.

Eysenck, H. J. Biological basis of personality. In Gardner Lindzey and Calvin S. Hall (eds.), Theories of personality: Primary sources and research. New York: Wiley, 1965: 382-387.

Eysenck, H. J. Handbook of Abnormal Psychology. New York: Basic Books, Inc., 1961.

Eysenck, H. J. Introverts, extraverts and sex. Psychology Today, 1971, (January).

Eysenck, H. J. The structure of human personality, third edition. London: Methuen & Co. Ltd., 1970.

Eysenck, S. B. G. Personality and pain assessment in childbirth of married and unmarried mothers. Journal of Mental Science, 1961, 107: 417-430.

Farley, Frank H. Introversion and achievement motivation. Psychological Reports, 1966, 19: 112.

Fenton, G. W. and L. Scotton. Personality and the alpha rhythm. British Journal of Psychiatry, 1967, 113: 1283-1289.

Fine, B. J. Introversion-extraversion and motor vehicle driver behaviour. Perceptual and Motor Skills, 1963, 16: 95-100.

French, John R. P., Jr. and Robert L. Kahn. A programmatic approach to studying the industrial environment and mental health. The Journal of Social Issues, 1962, 18(3): 1-47.

French, John W. The description of aptitude and achievement tests in terms of rotated factors. Chicago: University of Chicago Press, 1951.

Frenkel-Brunswick, Else. Intolerance of ambiguity as an emotional and perceptual personality variable. Journal of Personality, 1949, 18: 108-143.

Frith, C. D. The interaction of noise and personality with critical flicker fusion performance. British Journal of Psychology, 1967, 58: 127-131.

Gale, A., M. Coles, and J. Blaydon. Extraversion-introversion and the electroencephogram. British Journal of Psychology, 1969, 60: 209-223.

Geis, Florence L. Machiavellianism and success in a three-person game. Doctoral disseration, Columbia University, 1964. (Dissertation Abstracts, 1965, 25(12, Pt. 1), 7407-7408.

Geis, Florence L. Machiavellianism in a semireal world. Proceedings of the 76th Annual Convention of the American Psychological Association, 1968, 3: 407-408.

Geis, Florence L., Richard Christie and Carnot Nelson. In search of the machiavel. In Richard Christie and Florence L. Geis (eds.), Studies in Machiavellianism. New York: Academic Press, 1970.

Geis, Florence L., E. Krupat, and D. Berger. Taking over in group discussion. Proceedings of the 76th Annual Convention of the American Psychological Association, 1968, 3: 245-6.

Gemmill, Gary R. and W. J. Heisler. Machiavellianism as a factor in managerial job strain, job satisfaction and upward mobility. Academy of Management Journal, 1972 (Mar), 15(1): 51-62.

Getzels, J. W. and E. G. Guba. Role, role conflict, and effectiveness: An empirical study. American Sociological Review, 1954, 19: 164-175.

Getzels, J. W. and E. G. Guba. Role conflict and personality. Journal of Personality, 1955, 24: 74-85.

Glass, A. and A. Broadhurst. Relationship between EEG and a measured cortical activity and personality variables. Electroencephalogram and Clinical Neurophysiological Journal, 1966, 21: 309.

Goldner, F. H. Demotion in industrial management. American Sociological Review, 1965, 30: 714-724.

Goode, William J. A theory of role strain. American Sociological Review, 1960, 25(4): 483-496.

Goode, William J. and Irving Fowler. Incentive factors in a low morale plant. American Sociological Review, 1949, 14(5): 618-624.

Gottlober, A.B. The relationships between brain potentials and personality. Journal of Experimental Psychology, 1938, 22: 67-74.

Gottlober, A. B. The inheritance of brain potentials. Journal of Experimental Psychology, 1938, 22: 193-200.

Gouldner, Alvin W. Cosmopolitans and locals: Toward an analysis of latent social roles. Administrative Science Quarterly, 1958, 2: 281-306, 444-80.

Grace, W. J. Life situations, emotions and chronic ulerative colitis. Research Publication, Association for Nervous and Mental Disorders, 1950, 29: 679-91.

Grinker, R., and J. Spiegel. Men Under Stress. Philadelphia: Blakiston, 1945.

Gross, E. Sources of lateral authority in personnel departments. Industrial Relations, 1964, 3 (May): 121-133.

Gross, Edward. Work, organization and stress. In Sol Levine and Norman A. Scotch (eds.), Social Stress. Chicago: Aldine Publishing Co., 1970.

Gross, Neal, and Ward S. Mason and Alexander W. McEachern. Expectation role analysis. New York: Wiley, 1958.

Guevara, Che. Guerrilla warfare. New York: Vintage, 1968.

Gurin, Gerald, Joseph Veroff and Sheila Feld. Americans view their mental health. New York: Basic Books, 1960.

Guterman, Stanley S. The machiavellians. A social psychological study of moral character and organizational milieu. Lincoln: University of Nebraska Press, 1970.

Gutman, Gloria M. A note on the MPI: age and sex differences in extraversion and neuroticism in a Canadian sample. British Journal of Social and Clinical Psychology, 1966, 5: 128-129.

Harris, T. M. Machiavellianism, judgment, independence and attitudes toward teammate in a co-operative judgment task. Unpublished doctoral dissertation, Columbia University, 1966. (Dissertation Abstract, 1967, 27(11-A): 3935.

Hamblin, R. Group integration during a crisis. Human Relations, 1958, 11: 67-76.

Haire, Mason. Psychology and the study of business. In R. A. Dahl, M. Haire, and P. F. Lazarsfeld (eds.), Social science research on business. New York: Columbia University Press, 1959; 45-98.

Haythorn, W., A. Couch, D. Haefner, P. Langham and L. Carter. The behaviour of authoritarian and egalitarian personalities in small groups. Human Relations, 1956, 9: 57-74.

Haythorn, W., D. Haefner, P. Langham, A. Couch and L. Carter. The effect of varying combination of authoritarian and egalitarian leaders and followers. Journal of Abnormal and Social Psychology, 1956, 53: 210-219

Haythorn, William W., Irwin Altman, and Thomas I. Myers. Emotional symptomatology and subjective stress in isolated pairs of men. Journal of Experimental Research in Personality, 1966, 199, 1(4), 290-305.

Henry, C. E. and R. Knott. A note on the relationship between personality and alpha rhythm on the electroencephalogram. Journal of Experimental Psychology, 1941, 28: 362-366.

Hershey, Robert. Effects of anticipated job loss on employee behavior. Journal of Applied Psychology, 1972 (June), 56(3): 273-5.

Hermans, Hubert, J. M. A questionnaire measure of achievement motivation. Journal of Applied Psychology, 1971, 55(5): 422-432.

Horvath, Fred E. Psychological stress. In Ludwig von Bertalanffy and Anatol Papyport (eds.), General Systems, 1959, 4: 203-230.

House, Robert J., Alan C. Filley and Damodar N. Gujarati. Leadership style, hierarchial influence and the satisfaction of subordinate role expectations: A test of Likert's influence proposition. Journal of Applied Psychology, 1971, 55(5): 422-432.

House, Robert J. and John R. Rizzo. Role conflict and ambiguity as critical variables in a model of organizational behaviour. Organization Behaviour and Human Performance, 1972, 7(3): 467-505.

House, Robert J. and John R. Rizzo. Toward the measurement of organizational practices: Scale development and validation. Journal of Applied Psychology, 1972, 56(5): 388-396.

Howarth, Edgar. Headache, personality and stress. British Journal of Psychiatry, 1965, 111(481): 1193-1197.

Howarth, Edgar. Some laboratory measures of extraversion-introversion. Perceptual and Motor Skills, 1963, 17(1): 55-60.

Hrebiniak, Lawrence G. and Alutto, Joseph A. Personal and role related factors in the development of organizational commitment. Administrative Science Quarterly, 1972, 17(4): 555-573.

Hume, W. I. The dimensions of central nervous arousal. Bulletin of British Psychology and Sociology, 1968, 21: 111.

Indik, Bernard P. The relationship between job-related stress and strain in industrial workers. Journal of Industrial Psychology, 1964 2(1): 22-27.

Indik, Bernard P. Toward an effective theory of organization behaviour. Personnel Administration, 1968, 31(4): 51-57.

Indik, Bernard P., Stanley E. Seashore and Jonathan Slesinger. Demographic correlates of psychological strain. Journal or Abnormal and Social Psychology, 1964, LXIX: 26-38.

Jackson, E. F. Status consistency and symptoms of stress. American Sociological Review, 1966, 27: 469-480.

Janis, Irving L. Psychological stress. New York: John Wiley, 1958.

Janis, Irving L. Stress and frustration. New York: Harcourt Brace Janovich, 1971.

Jaques, Elliott. Executive organization and individual adjustment. Journal of Psychosomatic Research, 1966, 10(1): 77-82.

Jensen, Arthur R. Authoritarian attitudes and personality maladjustment. Journal of Abnormal and Social Psychology, 1957, 54: 303-311.

Jones, M. Authoritarianism and intolerance of fluctuation. Journal of Abnormal and Social Psychology, 1955, 50: 125-26.

Kahn, Robert L., Donald M. Wolfe, Robert P. Quinn, J. Diedrick Snoek, and Robert A. Rosenthal. Organizational stress: Studies in role conflict and ambiguity. New York: John Wiley and Sons, 1964.

Kepecs, J. G. and M. Robin. Life situations, emotions and atopic, dermatitis. Research Publication, Association for Nervous and Mental Disorders, 1950, 29: 1010-1015.

Klein, Stuart M. Workers under stress. Lexington: University of Kentucky Press, 1971.

Koons, Paul B. and Robert W. Birch. Reevaluation of the EPPS norms. Psychological Reports, 1964, 14: 905 906.

Kornhauser, Arthur. Mental health of the industrial worker: A Detroit study. New York: John Wiley and Sons, 1965.

Kornhauser, William and Warren O. Hagstrom. Scientists in industry: Conflict and accommodation. Los Angeles: University of California Press, 1962.

Lawson, Reed. Frustration. New York: Macmillan, 1965.

Lazarus, R. A. and R. W. Baker. Personality and psychological stress: A theoretical and methodological framework. Psychological Newsletter, 1956, 8: 21-32.

Lazarus, Richard S. A laboratory approach to the dynamics of psychological stress. Administrative Science Quarterly, 1963, 2: 192-213.

Lazarus, Richard S. A laboratory approach to the dynamics of psychological stress. American Psychologist, 1964, 19(6), 400-411.

Lazarus, Richard S., James Deese, and Sonia F. Osler. The effects of psychological stress upon performance. Psychological Bulletin, 1952, 49(4): 293-317.

Levi, Lennart. Society, stress and disease (The psychosocial environment and psychosomatic diseases). London: Oxford University Press, 1971.

Levi, Lennart. Stress. Sources, management and prevention. New York: Liveright Publishing Corp., 1967.

Levine, Sol and Norman A. Scotch. Social stress. Chicago: Aldine Publishing Co., 1970.

Levinson, D. and N. A. Sanford. A scale for the measurement of anti-semitism. Journal of Psychology, 1944, 17: 339-370.

Levinson, Daniel J. Role, personality, and social structure in the organizational setting. Journal of Abnormal and Social Psychology, 1959, 58: 170-180.

Levinson, H. Executive stress. London: Harper and Row, 1970.

Lewin, Kurt. Field theory in social science. New York: Harper and Brothers, 1951.

Lewin, Kurt. The conceptual representation and the measurement of psychological forces. Contributions to Psychological Theory, 1938, 1(4): 1-247.

Lichtman, Cary M. Some intrapersonal response correlates of organization rank. Journal of Applied Psychology, 1970, 54(1, Pt. 1): 77-80.

Lieblich, A. The effects of stress and motivation to succeed on test risk. Journal of Personality, 1968, 36(4): 608-615.

Lindeman, E. Modifications in the course of ulcerative colitis in relationship to changes in life situations and reaction patterns. Research Publication, Association for Nervous and Mental Disorders, 1950, 29: 706-723.

Margolin, S. G. Variations of gastric functions during conscious and unconscious conflict states. Research Publication, Association for Nervous and Mental Disorders, 1950, 29: 656-664.

Marshall, Simone Verniere. Personality correlates of peptic ulcer patients. Doctoral dissertation, Columbia University, 1959. Dissertation Abstract, 20: 7590.

Martin, M. and Urban Y. An electroencephologram investigation of individual differences in the process of conditioning. Proceedings of the 18th International Congress of Experimental Psychology, Moscow, 1966, 9: 106-109.

McClelland, David C. The achieving society. Princeton, New Jersey: D. Van Nostrand Company, Inc., 1959.

McClelland, D. C. Risk taking in children with high and low need in achievement. In J. W. Atkinson, (ed.), Motives in fantasy, action, and society. Princeton, N. J.: Van Nostrand, 1958.

McClelland, David C. N Achievement and entrepreneurship: A longitudinal study. Journal of Personality and Social Psychology, 1965 (April), 1(4): 389-392.

McClelland, D. C. The roots of consciousness. Princeton, N. J.: Van Nostrand, 1964.

McClelland, D. C., J. W. Atkinson, R. A. Clark, and E. L. Lowell. The achievement motive. New York: Appleton-Century-Crofts, 1953.

McGregor, Douglas. The professional manager. New York: McGraw-Hill, 1967.

McLaughlin, R. J. and Eysenck, H. J. Extraversion, neuroticism, and paired-associates learning. Journal of Experimental Research in Personality, 1967, 2: 128-132.

Mechanic, D. Medical Sociology. New York: Free Press, 1968.

Merton, R. K. Social theory and social structure, 2nd edition. Glencoe, Illinois: Free Press, 1957.

Miller, Neal. Experimental studies in conflict. In J. McV. Hunt (ed.), Personality and the behavior disorders. New York: Ronald Press, 1944, 1, 431-465.

Miller, Kent S. and Philip Worchel. The effects of need achievement and self-ideal discrepancy on performance under stress. Journal of Personality, 1956, 25: 176-190.

Millon, R. Authoritarianism and acceptance of ingroup set. Journal of Abnormal and Social Psychology, 1959, 48: 199-204.

Mills, Judson and Elliott Arnson. Opinion change as a function of when information about the communicator is received and he is attractive or expert. Journal of Personality and Social Psychology, 1965, 1(2): 173-177.

Mitchell, William L. Occupational role strains. Administrative Science Quarterly, 1958, 3(2), 210-228.

More, D. M. Demotion. Social Problems, 1962, 9: 213-221.

Mundy-Castle, A. C. The relationship between primary-secondary function and the alpha rhythm of the encephologram. Journal of National Institutional Personnel Research, 1955, 6: 95-102.

Murphy, Joseph Allison. An investigation into certain personality factors of elementary school teachers and principals with reference to the organizational climate of the school. Ed.D. dissertation, University of Georgia. (Dissertation Abstract 27: 3577).

Murray, H. A. Explorations in personality. New York: Oxford University Press, 1938.

Muthayya, B. C. A study of job tension among block development officers. Psychological Annual, 1970, 4: 13-17.

Nadler, E. B. Yielding. Authoritarianism and authoritarian ideology regarding groups. Journal of Abnormal and Social Psychology, 1959, 58: 408-410.

Neel, Robert G. Nervous stress in the industrial situation. Personnel Psychology, 1955, 8: 405-415.

Nibylitsyn, V. D. An electroencephalogramic investigation of the properties of strength of the nervous system and equilibrium of the nervous processes in man, using factor analysis. In B. M. Teplov (ed.), Typological features of higher nervous activity in man, 1963, 3: 47-80.

O'Donnell, Thomas M. Organizational and personal variables associated with teacher role strain. Dissertation Abstract International, 1970, 30(8-A): 3549-3550.

Opton, Edward M., Jr., and Richard S. Lazarus. Personality determinants of psychophysiological response to stress: A theoretical analysis and an experiment. Journal of Personality and Social Psychology, 1967, 6(3): 291-303.

Paloli, Ernest G. Organization types and role strains: An experimental study of complex organizations. Sociology and Social Research, 1967, 51(2), 171-184.

Parsons, T. and E. Shils. Toward a general theory of action. Cambridge: Harvard University, 1951 (Part 2).

Price, Lowell U. Organizational stress and job satisfaction of public high school teachers. Dissertation Abstract International, 1971, 31(11-A): 5727-5728.

Raskin, Marjorie. Quoted by Walter McQuade, Doing something about stress. Fortune, May, 1973: 250 - 261.

Reiter, Henry H. A note on the inconsistency of measures of need achievement. Journal of Psychological Studies, 1962, 13: 170-171.

Rim, Y. Risk-taking and need for achievement. Acta Psychology, 1963, 21: 108-115.

Rim, Y. Personality and group decisions involving risk. Psychological Record, 1964, 14: 37-45.

Rim, Y. Machiavellianism and decisions involving risk. British Journal of Social and Clinical Psychology, 1966, 5: 31-36.

Ripley, H. S. Life situations, emotions, glaucoma. Research Publication, Association of Nervous and Mental Disorders, 1950, 29: 523-536.

Rizzo, John R., Robert J. House and S. I. Lirtzman. Role conflict and ambiguity in complex organizations. Administrative Science Quarterly, 1970, 15(2): 150-163.

Roethlisberger, F. J. and William J. Dickson. Management and the worker. Cambridge, Mass.: Harvard University Press, 1939.

Rogers, Rolf E. Psychosomatic aspects of modern organizations. Human Resource Management, 1973.

Rogers, Rolf E. and J. David Johnson. Precipitators of Stress in Organizations: An Analysis of Managerial Perceptions (unpublished paper, 1974).

Rosenzweig, Saul. An outline of frustration theory. In J. McV. Hunt (ed.), Personality and the Behavior Disorders. New York: Ronald Press, 1944, 1: 379-388.

Sales, Stephen M. Some effects of role overload and role underload. Organization Behavior and Human Performance, 1970, 5(6): 592-608.

Sanford, Fillimore. Authoritarianism and leadership. Philadelphia Institute for research in human relations, 1950.

Sanford, Nevitt. The approach of the authoritarian personality. In J. L. McCary (ed.), Psychology of personality. Six modern approaches. New York: Grave Press, 1956: 261-282.

Sanford, Nevitt. The theory of the authoritarian personality. In Lawrence S. Wrightsman, Jr. (ed.), Contemporary issues in social psychology. Monterey, Calif.: Brooks/Cole Division, Wadsworth Publishing Co., 1968, pp. 129 - 141.

Sarason, Irwin G. Test anxiety and the model who fails. Journal of Personal and Social Psychology, 1972, 22(3): 410-413.

Savage, R. D. Electro-cerebral activity, extroversion and neuroticism. British Journal of Psychiatry, 1964, 110: 98-100.

Sayles, Leonard K. and Margaret K. Chandler. Managerial behavior. Administration in complex organizations. New York: McGraw-Hill, 1964.

Schachter, J., T. A. Williams, R. Rowe, J. S. Schaster, and J. Jameson. Personality correlates of psychological reactivity to stress; A study of 46 college males. American Journal of Psychiatry, 1965, 121: XII-XXIV.

Schachter, S. The psychology of affiliation. Stanford: Stanford University Press, 1959.

Schmeidler, Gertrude R., Iris Bruel, Stanley Ginsberg, and Mary Lukomnik. Motivation, anxiety, and stress in a difficult verbal task. Psychological Reports, 1965, 17(1): 247-255.

Scott, Mary Hughie. An analytical study of certain motives and needs of prospective women teachers. Doctoral dissertation, University of Georgia. (Dissertation Abstract: 21: 2211).

Seeman, M. Role conflict and ambivalence in leadership. American Sociological Review, 1953, 18: 373-380.

Selye, H. The stress of life. New York: McGraw-Hill, 1956.

Selznick, P. Leadership in administration. Evanston, Ill.: Row, Peterson, 1957.

Smith, Seward and William W. Haythorn. Effects of compatibility, crowding, group size, and leadership seniority on stress, anxiety, hostility, and annoyance in isolated groups. Journal of Experimental Research in Personality, 1971, 5: 67-79.

Shapiro, Kenneth J. and Irving E. Alexander. Extraversion-introversion, affiliation and anxiety. Journal of Personality, 1969, 37(3): 1969, 37(3): 387-406.

Shaw, Lynette and Herbert S. Sichel. Accident proneness. Research in occurrence, causation, and prevention of road accidents. Oxford: Permagon Press, 1971.

Sherwood, John J. Self-report and projective measures of achievement and affiliation. Journal of Consulting Psychology, 1965, 29: 329-337.

Sisson, B. D. and R. J. Ellingson. On the relationship between 'normal' EEG patterns and personality variables. Journal of Nervous and Mental Diseases, 1955, 121: 353-358.

Snoek, J. Diedrick. Role strain in diversified role sets. American Journal of Sociology, 1966, 71: 363-372.

Stevenson, I. P. and C. H. Duncan. Alterations in cardiac function and circulatory efficiency during periods of life stress as shown by changes in the rate, rhythm, electrocardiographic pattern

output of the heart in those with cardiovascular stress. Research Publication, Association for Nervous and Mental Disorders, 1950, 29: 799-817.

Stouffer, S. and J. Toby. Role conflict and personality. American Journal of Sociology, 1951, 56(5): 395-406.

Torre, Mottran. 'It isn't the tension . . . It's what you do with it.' In Theodore Irwin (ed.), Tension. New York: American Research Council, 1966: 7-12.

Trist, E. L. and K. W. Bamford. Some social psychological consequences of the longwall method of coal getting. Human Relations, 1951, 4: 3-38.

Tosi, Henry. Organization stress as a moderator of the relationship between influence and role response. Academy of Management Journal, 1971, 14: 7-20.

Turner, John H., Alan C. Filley and Robert J. House. Studies in managerial process and organization behavior. Glenview, Ill.: Scott, Foresman, 1972.

Vogel, W., Susan Raymond and R. S. Lazarus. Intrinsic motivation and psychological stress. Journal of Abnormal and Social Psychology, 1959, 58: 225-233.

Vogel, William, Robert W. Baker, and Richard S. Lazarus. The role of motivation in psychological stress. Journal of Abnormal and Social Psychology, 1958, 56(1): 105-112.

Vroom, V. H. Work and motivation. New York: John Wiley, 1964.

Watson, C. Morale during unemployment. In G. Watson,(ed.), Civilian Morale. Boston: Houghton Mifflin, 1942.

Weber, G. H. Conflicts between professional and nonprofessional personnel in institutional delinquency treatment. In D. M. Vollmer and D. L. Mills (eds.), Professionalization. Englewood Cliffs, N. J.: Prentics Hall, 1966.

Wells, W, G. Weinert, and Marilyn Ruble. Conformity pressure and authoritarian personality. Journal of Psychology, 1956, 42: 133-136.

White, Kinnard. Anxiety, extraversion-introversion, and divergent thinking ability. Journal of Creative Behaviour, 1968, 2: 119-127.

Whyte, W. F. Organization behaviour: Theory and application. Homewood, Ill.: Irwin-Dorsey, 1969.

Wilde, G. J. S. The significance of decided and query answers to lie-items in a personality questionnaire. British Journal of Sociology and Clinical Psychology, 1966, 5: 37-41.

Wilinsky, H. L. The uneven distribution of leisure: The impact of economic growth on 'free time'. Social Problems, 1961, 9: 32-56.

Wilinsky, H. L. and H. Edwards. The skidder: Ideological adjustment of downwardly mobile workers. American Sociological Review, 1959, 24: 215-231.

Wispe, L. and K. Lloyd. Some situational and psychological determinants of the desire for structure in interpersonal relations. Journal of Abnormal and Social Psychology, 1955, 51: 57-60.

Wolf, S. Hypertension as a reaction pattern to stress; summary of experimental data on variations in blood pressure and renal blood flow. Annals of Internal Medicine, 1950, 29: 1056-1076.

Wolff, H. G. Life stress and bodily diseases. Baltimore: Williams & Wilkins, 1950.

Wolff, H. G. Headache and other pain. New York: Oxford, 1948.

Wolff, H. G. Stress and disease. 2nd edition. Springfield, Ill.: Charles C. Thomas, 1968. (1st edition, 1953).

Zelen, S. Goal setting rigidity in an ambiguous situation. Journal of Consulting Psychology, 1955, 19: 395-399.

APPENDIX A

5911 - 115 Street
Edmonton, Alberta
T6H 3P6

Fellow Colleague:

May I request your assistance in a reaearch project on teacher stress at VCHS? The purposes of my study are: (a) To explore the extent of stress at VCHS and to compare that stress index to other occupational indices. (As a teacher, I cannot help but feel that from a negotiation point of view, such comparisons could be to our advantage). (b) To identify the kinds of school situations which lead to a high degree of stress; (c) To determine the association between these situational characteristics and certain personality and institutional traits; (d) To the extent possible, to determine the positive and negative effects that stress has on teachers as a group and on VCHS as an organization.

Please answer the questions as honestly as you can—all information is absolutely confidential. Furthermore, although I have no intention of trying to identify any particular answer sheet, should identities be revealed in the course of the study, precautions (regrouping of categories, etc.) will be taken to protect your anonymity.

The questionnaire, to provide answers to the above problems, has to be long. It has however been broken down into three parts. In the test run, the time taken for each of the parts has ranged from 12 minutes to 28 minutes. I would prefer that you do not think about any question too long; your first reaction is desired.

Also, I would appreciate being able to tie the three sections together, therefore I am asking that you use the same four-number identification code on all three sections.

May I count on your assistance?

Sincerely,

Olga

Olga Crocker
Phones 434-0238, 432-5779

APPENDIX B

STRESS QUESTIONNAIRE

Administered to
Teaching Staff
Victoria Composite High School
November - December, 1973

(Sheet No. 1)

1. Sheet No. 1. Please mark 1 opposite the first question on the computer answer sheet.

2. Four number code. You may use any number you wish, e.g. telephone
3. number, month and date of birth, etc. There will be three ques-
4. tionnaires; please use the same number on all three. (Because of the
5. nature of the computer score sheet, only the numbers 1,2,3,4,5 can be used).

IN EACH OF THE QUESTIONS BELOW, PICK THE STATEMENT THAT MOST CORRECTLY DESCRIBES YOU OR YOUR SITUATION.

6. Age at the present time
   (1) Less than 25
   (2) 26 - 30
   (3) 31 - 40
   (4) 41 - 50
   (5) 51+

7. Your marital status is:
   (1) Single
   (2) Married
   (3) Divorced
   (4) Separated
   (5) Other

8. Sex
   (1) Female
   (2) Male

9. The number of years of education recognized for salary purposes is:
   (1) Less than 4 years
   (2) four
   (3) five
   (4) six

10. The actual number of years of education beyond the high school level is:
   (1) I have less than 4 years of university training
   (2) I have a 4-year bachelor's degree (actual training period—4 years)
   (3) I am working on a master's degree or a second degree
   (4) I have a master's degree or two bachelor's degrees
   (5) I am doing or have done post-master's graduate work

11. What is your position in the school?
(1) administrator
(2) curricular associate, assistant curricular associate, acting curricular associate
(3) counsellor
(4) teacher

12. I teach
(1) full-time
(2) half-time
(3) no more than one class daily
(4) none of the time

13. I am a teacher in the ———field. (If not presently a teacher, answer on the basis of your last position).
(1) Mathematics-Science
(2) Humanities (English, social studies, modern languages, fine arts)
(3) Vocational, industrial arts, home economics, or business education;
(4) Physical education, counselling
(5) T. D. Baker

14. The country in which my elementary education was taken was:
(1) Alberta
(2) Another province in Canada
(3) United States
(4) Europe
(5) Other

15. My participation in ATA affairs this year has been as
(1) An executive officer
(2) A school counsellor
(3) A committee member
(4) Some other active participation
(5) I pay my dues but do not get involved

16. I would rate my health as:
(1) perfect
(2) very good but not perfect
(3) average
(4) there are some bad days
(5) poor

17. If I could have the position I wanted with the EPSB, it would be:
(1) Teacher or counsellor
(2) Curricular associate
(3) Associate principal
(4) Principal
(5) Member of central office staff

18. The number of years of teaching experience that I have (as at the end of June, 1973) is:
    (1) First two years of teaching
    (2) two to five years of teaching experience
    (3) Six to ten years of teaching experience
    (4) Eleven to twenty years of teaching experience
    (5) More than twenty years of teaching experience

19. The number of years that I have been at VCHS is:
    (1) First two years
    (2) Two to five years
    (3) Six to ten years
    (4) Eleven to twenty years
    (5) More than twenty years

20. I regard myself as a person who is <u>most</u> concerned with (choose only one, please):
    (1) the processes of teaching—how it should be done, methodology, technique, etc.
    (2) the change in the life style or behaviour pattern affected by me in each of my students;
    (3) in getting the content of the subject I teach across to my students;
    (4) in self-improvement;
    (5) in keeping things as they are, i.e. not rocking the boat.

STRESS QUESTIONNAIRE, Sheet No. 1 Page 4

CHOOSE ONLY ONE OF THE FIVE RESPONSES FOR EACH OF THE FOLLOWING QUESTIONS.

Choice of	1	means	Never
	2		Rarely
	3		Sometimes
	4		Often
	5		All the time

How often do you:

21. Feel that you have too little authority to carry out your responsibilities?

22. Feel unclear just what the scope and responsibilities of your job are?

23. Not know what opportunities for advancement or promotion exist for you?

24. Feel that you have too heavy a work load, one that you cannot possibly finish during an ordinary workday?

25. Think that you will not be able to satisfy the conflicting demands of various people around you?

26. Feel that you are not fully qualified to handle your job?

27. Not know what your supervisor (curricular associate, assistant principal, principal, etc.) thinks of you, how he evaluates your performance?

28. Find yourself unable to get information needed to carry out your job?

29. Worry about decisions that affect the lives of people that you know?

30. Feel that you may not be liked and accepted by people at work?

31. Feel unable to influence your immediate supervisor's decisions and actions that affect you?

32. Not know just what the people you work with expect of you?

33. Think that the amount of work you have to do may interfere with how well it is done?

34. Feel that you have to do things on the job that are against your better judgment?

35. Feel that your job interferes with your family life or out of school interests?

STRESS QUESTIONNAIRE, Sheet No. 1 Page 5

CHOOSE THE NUMBER WHICH INDICATES THE EXTENT OF YOUR AGREEMENT WITH EACH OF THE FOLLOWING STATEMENTS

1	means	Disagree very much
2		Disagree a little
3		Neither agree nor disagree
4		Agree a little
5		Agree a lot

36. Human nature being what it is, there must always be war and conflict.

37. The most important thing a child should learn is obedience to his parents.

38. A few strong leaders could make this country better than all the laws and talk.

39. Most people who don't get ahead just don't have enough will power.

40. Women should stay out of politics.

41. People sometimes say that an insult to your honor should not be forgotten.

42. People can be trusted.

43.	I frequently engage in competitive activity where winning or doing better than someone else is the primary concern.	1 2 3 4 5	I seldom compete
44.	I strive for unique, extra-ordinary, and creative accomplish-ments which are marks of success.	1 2 3 4 5	I strive for more ordinary success.
45.	I set difficult and long-term goals for myself which I attempt to reach.	1 2 3 4 5	I concentrate more on short-term and daily tasks.

STRESS QUESTIONNAIRE, Sheet No. 1 Page 6

DIRECTIONS FOR THIS PORTION

This test consists of 27 statements of opinions and attitudes. For each statement please indicate which of the three alternatives is most true, most preferred, or most important to you by filling in the number "1" on the answer sheet beside that question number.

The same three statements are repeated. Choose the least true or least preferred of the three alternatives and fill in the number two on the score sheet beside that number. You may mark number "2" with the top set or the bottom set.
Do not debate too long over any one statement; your first reaction is desired.

One of the greatest satisfactions of my life is:

MOST PREFERRED:
46. Recognition of my efforts.
47. The feeling of a job well done.
48. The fun of being with friends.

LEAST PREFERRED:
49. Recognition of my efforts.
50. The feeling of a job well done.
51. The fun of being with friends.

If I played football, I would like to be:

MOST PREFERRED:
52. The coach whose planning pays off in victory..
53. The star quarterback.
54. Elected captain of the team.

LEAST PREFERRED:
55. The coach whose planning pays off in victory.
56. The star quarterback.
57. Elected captain of the team.

The best instructors are those who:

MOST PREFERRED:
58. Give you individual help and seem interested in you.
59. Make a field of study interesting, so you will want to know more about it.
60. Make the class a friendly group where you feel free to express an opinion.

LEAST PREFERRED:
61. Give you individual help and seem interested in you.
62. Make a field of study interesting, so you will want to know more about it.
63. Make the class a friendly group where you feel free to express an opinion.

Students downgrade instructors who:

MOST PREFERRED:
64. Are sarcastic and seem to take a dislike to certain people.
65. Make everyone compete with each other.
66. Simply can't get an idea across and don't seem interested in their subject.

LEAST PREFERRED:
67. Are sarcastic and seem to take a dislike to certain people.
68. Make everyone compete with each other.
69. Simply can't get an idea across and don't seem interested in their subject.

I like my friends to:

MOST PREFERRED:
70. Want to help others whenever possible.
71. Be loyal at all times.
72. Be intelligent and interested in a number of things.

LEAST PREFERRED:
73. Want to help others whenever possible.
74. Be loyal at all times.
75. Be intelligent and interested in a number of things.

I would like to be known as:

MOST PREFERRED:
76. A successful person
77. An efficient person
78. A friendly person.

LEAST PREFERRED:
79. A successful person
80. An efficient person
81. A friendly person.

My best friends:

MOST PREFERRED:
82. Are easy to get along with
83. Know more than I do.
84. Are loyal to me.

LEAST PREFERRED:
85. Are easy to get along with.
86. Know more than I do.
87. Are loyal to me.

If I had my choice, I would like to be:

MOST PREFERRED:
88. A research scientist.
89. A good salesman.
90. A test pilot.

If I had my choice, I would like to be:

LEAST PREFERRED:
91. A research scientist.
92. A good salesman.
93. A test pilot.

As a youngster I enjoyed:

MOST PREFERRED:
94. Just being with the gang.
95. The feeling of accomplishment I had after I did something well.
96. Being praised for some achievement.

LEAST PREFERRED:
97. Just being with the gang.
98. The feeling of accomplishment I had after I did something well.
99. Being praised for some achievement.

Schools could do a better job if they:

MOST PREFERRED:
100. Taught children to follow through on a job.
101. Encouraged independence and ability in children.
102. Put less emphasis on competition and more on getting along with others.

LEAST PREFERRED:
103. Taught children to follow through on a job.
104. Encouraged independence and ability in children.
105. Put less emphasis on competition and more on getting along with others.

START A NEW COMPUTER SCORE SHEET. LEAVE QUESTIONS 1-5 BLANK.

The trouble with organizations like the armed forces is:

MOST PREFERRED:
106. The rank system is undemocratic.
107. The individual gets lost in the organization.
108. You can never get anything done with all the red tape.

LEAST PREFERRED:
109. The rank system is undemocratic.
110. The individual gets lost in the organization.
111. You can never get anything done with all the red tape.

If I had more time, I would like to:

MOST PREFERRED:
112. Make more friends.
113. Work at my hobby or learning something new and interesting.
114. Just take it easy, without any pressure.

LEAST PREFERRED:
115. Make more friends.
116. Work at my hobby or learning something new and interesting.
117. Just take it easy, without any pressure.

I think I do my best when:

MOST PREFERRED:
118. I work with a group of people who are congenial.
119. I have a job that is in my line.
120. My efforts are rewarded.

LEAST PREFERRED:
121. I work with a group of people who are congenial.
122. I have a job that is in my line.
123. My efforts are rewarded.

I like:

MOST PREFERRED:
124. Being appreciated by others.
125. Being satisfied personally with my performance.
126. Being with friends with whom I can have a good time.

LEAST PREFERRED:
127. Being appreciated by others.
128. Being satisfied personally with my performance.
129. Being with friends with whom I can have a good time.

I would like to see a story about myself in the newspaper:

MOST PREFERRED:
130. Describing a project I had completed.
131. Citing the value of my actions.
132. Announcing my election to a fraternal organization.

LEAST PREFERRED:
133. Describing a project that I had completed.
134. Citing the value of my actions.
135. Announcing my election to a fraternal organization.

I learn best when my instructor:

MOST PREFERRED:
136. Provides me with individual attention.
137. Stimulates me into working harder by arousing my curiosity.
138. Makes it easy to discuss matters with him and with others.

LEAST PREFERRED:
139. Provides me with individual attention.
140. Stimulates me into working harder by arousing my curiosity.
141. Makes it easy to discuss matters with him and with others.

Nothing is worse than:

MOST PREFERRED:
142. Having your self-esteem damaged.
143. Failure on an important task.
144. Losing your friends.

Nothing is worse than:

LEAST PREFERRED:
145. Having your self-esteem damaged.
146. Failure on an important task.
147. Losing your friends.

I like:

MOST PREFERRED:
148. Personal praise.
149. Cooperative effort.
150. Wisdom.

LEAST PREFERRED:
151. Personal praise.
152. Cooperative effort.
153. Wisdom.

I am considerably disturbed by:

MOST PREFERRED:
154. Hostile arguments.
155. Rigidity and refusal to see the value of new ways.
156. Persons who degrade themselves.

LEAST PREFERRED:
157. Hostile arguments.
158. Rigidity and refusal to see the value of new ways.
159. Persons who degrade themselves.

I would like:

MOST PREFERRED:
160. To be accepted as a friend by others.
161. Help others complete a mutual task.
162. Be admired by others.

163. To be accepted as a friend by others.
164. Help others complete a mutual task.
165. Be admired by others.

I like a leader who:

MOST PREFERRED:
166. Gets the job done.
167. Makes himself respected by his followers.
168. Makes himself easy to talk to.

LEAST PREFERRED:
169. Gets the job done.
170. Makes himself respected by his followers.
171. Makes himself easy to talk to.

I would like to:

MOST PREFERRED:
172. Have a committee meeting to decide what the problem is.
173. Work out by myself the correct solution to the problem.
174. Be valued by my boss.

I would like to:

LEAST PREFERRED:
175. Have a committee meeting to decide what the problem is.
176. Work out by myself the correct solution to the problem.
177. Be valued by my boss.

Which type of book would you like to read?

MOST PREFERRED:
178. A book on getting along with people.
179. A historical romance.
180. A how-to-do-it book.

LEAST PREFERRED:
181. A book on getting along with people.
182. A historical romance.
183. A how-to-do-it book.

Which would you prefer?

MOST PREFERRED:
184. Teach pupils how to play the violin.
185. Play violin solos in concerts.
186. Write violin concertos.

LEAST PREFERRED:
187. Teach pupils how to play the violin.
188. Play violin solos in concerts.
189. Write violin concertos.

Which leisure time activity is satisfying to you?

MOST PREFERRED:
190. Watching westerns on TV.
191. Chatting with acquaintances.
192. Keeping busy with interesting hobbies.

LEAST PREFERRED:
193. Watching westerns on TV.
194. Chatting with acquaintances.
195. Keeping busy with interesting hobbies.

Which would you prefer, assuming the same amount of money was involved?

MOST PREFERRED:
196. Plan a successful contest.
197. Win a contest.
198. Advertise the contest and get others to participate.

LEAST PREFERRED
199. Plan a successful contest.
200. Win a contest.
201. Advertise the contest and get others to participate.

STRESS QUESTIONNAIRE, Sheet No. 1 Page 12

Which is important to you?

MOST IMPORTANT:
202. To know what you want to do.
203. To know how to do what you want.
204. To know how to help others to do what they want.

LEAST IMPORTANT:
205. To know what you want to do.
206. To know how to do what you want.
207. To know how to help others to do what they want.

STRESS QUESTIONNAIRE

Administered to
Teaching Staff
Victoria Composite High School
November - December 1973

(Sheet No. 2)

1. Sheet No. 2. Please mark 2 opposite the first question on the computer answer sheet.

2 Your own four number code. Please use the same code that you used
3 on the first set of questionnaires.
4
5

INSTRUCTIONS FOR THIS PORTION

Here are some questions regarding the way you behave, feel and act. Try and decide whether "Yes" or "No" represents your usual way of acting or feeling. Then blacken the No. 1 space if your answer is "yes"; the No. 2 space if your answer is "no".

Work quickly, and don't spend too much time over any question; we want your first reaction, not a long drawn-out thought process. This portion of the questionnaire shouldn't take more than two-three minutes. Be sure not to omit any questions. Work quickly, and remember to answer every question. There are no right and no wrong answers, and this isn't a test of intelligence or ability, but simply a measure of the way you behave.

---

6. Do you often long for excitement?
7. Do you often need understanding friends to cheer you up?
8. Are you usually carefree?
9. Do you find it very hard to take no for an answer?
10. Do you stop and think things over before doing anything?

11. If you say you will do something do you always keep your promise, no matter how inconvenient it might be to do so?
12. Does your mood often go up and down?
13. Do you generally do and say things quickly without stopping to think?
14. Do you ever feel 'just miserable' for no good reason?
15. Would you do almost anything for a dare?

16. Do you suddenly feel shy when you want to talk to an attractive stranger?
17. Once in a while do you lose your temper and get angry?
18. Do you often do things on the spur of the moment?
19. Do you often worry about things you should not have done or said?
20. Generally do you prefer reading to meeting people?

STRESS QUESTIONNAIRE, Sheet No. 2 Page 2

21. Are your feeling rather easily hurt?
22. Do you like going out a lot?
23. Do you occasionally have thoughts and ideas that you would not like other people to know about?
24. Are you sometimes bubbling over with energy and sometimes very sluggish?
25. Do you prefer to have few but special friends?

26. Do you daydream a lot?
27. When people shout at you, do you shout back?
28. Are you troubled about feelings of guilt?
29. Are all your habits good and desirable ones?
30. Can you usually let yourself go and enjoy youself a lot at a gay party?

31. Would you call yourself tense or 'highly-strung'?
32. Do other people think of you as being very lively?
33. After you have done something important, do you often come away feeling you could have done better?
34. Are you mostly quiet when you are with other people?
35. Do you sometimes gossip?

36. Do ideas run through your head so that you cannot sleep?
37. If there is something you want to know about, would you rather look it up in a book than talk to someone about it?
38. Do you get palpitations or thumping in your heart?
39. Do you like the kind of work that you need to pay close attention to?
40. Do you get attacks of shaking or trembling?

41. Would you always declare everything at the customs, even if you knew that you could never be found out?
42. Do you hate being with a crowd who play jokes on one another?
43. Are you an irritable person?
44. Do you like doing things in which you have to act quickly?
45. Do you worry about awful things that might happen?

46. Are you slow and unhurried in the way you move?
47. Have you ever been late for an appointment or work?
48. Do you have many nightmares?
49. Do you like talking to people so much that you would never miss a chance to talk to a stranger?
50. Are you troubled by aches and pains?

51. Would you be very unhappy if you could not see lots of people most of the time?
52. Would you call yourself a nervous person?
53. Of all the people you know are there some whom you definitely do not like?
54. Would you say you were fairly self-confident?
55. Are you easily hurt when people find fault with you or your work?

56. Do you find it hard to really enjoy yourself at a lively party?
57. Are you troubled with feelings of inferiority?
58. Can you easily get some life into a rather dull party?
59. Do you sometimes talk about things you know nothing about?
60. Do you worry about your health?

61. Do you like playing pranks on others?
62. Do you suffer from sleeplessness?

INSTRUCTIONS FOR THIS PORTION

You will find 20 groups of statements listed below. Each group is composed of three statements. Each statement refers to a way of thinking about people or things in general. They reflect opinions and not matters of fact—there are no 'right' or 'wrong' answers and different people have been found to agree with different statements.

Please read each of the statements in each group. Then decide <u>first</u> which of the statements is <u>most true</u> or comes closest to describing your own beliefs. Mark the number "1" beside that question on the computer score sheet.

The same three statements are repeated immediately below. Decide which of the remaining two statements is <u>most false</u> or is the farthest from your own beliefs. Mark the number "2" beside that question on the computer score sheet. (You may mark the "2" with the top set or the bottom set).

PLEASE DO NOT OMIT ANY GROUPS OF STATEMENTS

Most true:
63. Never tell anyone the real reason you did something unless it is useful to do so.
64. The well-being of the individual is the goal that should be worked for before anything else.
65. Once a truly intelligent person makes up his mind about the answer to a problem he rarely continues to think about it.

Most false:
66. Never tell anyone the real reason you did something unless it is useful to do so.
67. The well-being of the individual is the goal that should be worked for before anything else.
68. Once a truly intelligent person makes up his mind about the answer to a problem he rarely continues to think about it.

STRESS QUESTIONNAIRE, SHEET NO. 2 Page 4

MOST TRUE:
69. People are getting so lazy and self-indulgent that it is bad for our country.
70. The best way to handle people is to tell them what they want to hear.
71. It would be a good thing if people were kinder to others less fortunate than themselves.

MOST FALSE:
72. People are getting so lazy and self-indulgent that it is bad for our country.
73. The best way to handle people is to tell them what they want to hear.
74. It would be a good thing if people were kinder to others less fortunate than themselves.

MOST TRUE:
75. Most people are basically good and kind.
76. The best criteria for a wife or husband is compatibility—other things are nice but not essential.
77. Only after a man has gotten from life what he wants should he concern himself with the injustices of the world.

MOST FALSE:
78. Most people are basically good and kind.
79. The best criteria for a wife or husband is compatibility—other things are nice but not essential.
80. Only after a man has gotten from life what he wants should he concern himself with the injustices in the world.

MOST TRUE:
81. Most people who get ahead in the world lead clean, moral lives.
82. Any man worth his salt shouldn't be blamed for putting his career above his family.
83. People would be better off if they were less concerned with how to do things and more with what to do.

MOST FALSE:
84. Most people who get ahead in the world lead clean, moral lives.
85. Any man worth his salt shouldn't be blamed for putting his career above his family.
86. People would be better off if they were less concerned with how to do things and more with what to do.

MOST TRUE:
87. A good teacher is one who points out unanswered questions rather than gives explicit answers.
88. When you ask someone to do something for you, it is best to give the real reasons for wanting it rather than giving reasons which might carry more weight.
89. A person's job is the best single guide as to the sort of person he is.

MOST FALSE: 90. A good teacher is one who points out unanswered questions rather than gives explicit answers.
91. When you ask someone to do something for you, it is best to give the real reasons for wanting it rather than giving reasons which might carry more weight.
92. A person's job is the best single guide as to the sort of person he is.

MOST TRUE: 93. The construction of such monumental works as the Egyptian pyramids was worth the enslavement of the workers who built them.
94. Once a way of handling problems has been worked out it is best to stick with it.
95. One should take action only when sure it is morally right.

MOST FALSE: 96. The construction of such monumental works as the Egyptian pyramids was worth the enslavement of the workers who built them.
97. Once a way of handling problems has been worked out it is best to stick with it.
98. One should take action only when sure it is morally right.

MOST TRUE: 99. The world would be a much better place to live in if people would let the future take care of itself and concern themselves only with enjoying the present.
100. It is wise to flatter important people.
101. Once a decision has been made, it is best to keep changing it as new circumstances arise.

MOST FALSE: 102. The world would be a much better place to live in if people would let the future take care of itself and concern themselves only with enjoying the present.
103. It is wise to flatter important people.
104. Once a decision has been made, it is best to keep changing it as new circumstances arise.

MOST TRUE: 105. It is a good policy to act as if you are doing the things you do because you have no other choice.
106. The biggest difference between most criminals and other people is that criminals are stupid enough to get caught.
107. Even the most hardened and vicious criminal has a spark of decency within him.

MOST FALSE: 108. It is a good policy to act as if you are doing the things you do because you have no other choice.
109. The biggest difference between most criminals and other people is that criminals are stupid enough to get caught.
110. Even the most hardened and vicious criminal has a spark of decency within him.

MOST TRUE:
111. All in all, it is better to be humble and honest than to be important and dishonest.
112. A man who is able and willing to work hard has a good chance of succeeding in whatever he wants to do.
113. If a thing doesn't help us in our daily lives, it isn't very important.

MOST FALSE:
114. All in all, it is better to be humble and honest than to be important and dishonest.
115. A man who is able and willing to work hard has a good chance of succeeding in whatever he wants to do.
116. If a thing doesn't help us in our daily lives, it isn't very important.

MOST TRUE:
117. A person shouldn't be punished for breaking a law which he thinks is unreasonable.
118. Too many criminals are not punished for their crime.
119. There is no excuse for lying to someone else.

MOST FALSE:
120. A person shouldn't be punished for breaking a law which he thinks is unreasonable.
121. Too many criminals are not punished for their crime.
122. There is no excuse for lying to someone else.

MOST TRUE:
123. Generally speaking, men won't work hard unless they're forced to do so.
124. Every person is entitled to a second chance, even after he commits a serious mistake.
125. People who can't make up their minds aren't worth bothering about.

MOST FALSE:
126. Generally speaking, men won't work hard unless they're forced to do so.
127. Every person is entitled to a second chance, even after he commits a serious mistake.
128. People who can't make up their minds aren't worth bothering about.

MOST TRUE:
129. A man's first responsibility is to his wife, not his mother.
130. Most men are brave.
131. It's best to pick friends that are intellectually stimulating rather than ones it is comfortable to be around.

Most false:
132. A man's first responsibility is to his wife, not his mother.
133. Most men are brave.
134. It's best to pick friends that are intellectually stimulating rather than ones it is comfortable to be around.

MOST TRUE:
135. There are very few people in the world worth concerning oneself about.
136. It is hard to get ahead without cutting corners here and there.
137. A capable person motivated for his own gain if more useful to society than a well-meaning but ineffective one.

MOST FALSE:
138. There are very few people in the world worth concerning oneself about.
139. It is hard to get ahead without cutting corners here and there.
140. A capable person motivated for his own gain is more useful to society than a well-meaning but ineffective one.

MOST TRUE:
141. It is best to give others the impression that you can change your mind.
142. It is a good working policy to keep on good terms with everyone.
143. Honesty is the best policy in all cases.

MOST FALSE:
144. It is best to give others the impression that you can change your mind.
145. It is a good working policy to keep on good terms with everyone.
146. Honesty is the best policy in all cases.

MOST TRUE:
147. It is possible to be good in all respects.
148. To help oneself is good; to help others even better
149. War and threats of war are unchangeable facts of human life.

MOST FALSE:
150. It is possible to be good in all respects.
151. To help oneself is good; to help others even better.
152. War and threats of war are unchangeable facts of human life.

MOST TRUE:
153. Barnum was probably right when he said that there's a sucker born every minute.
154. Life is pretty dull unless one deliberately stirs up some excitement.
155. Most people would be better off if they controlled their emotions.

MOST FALSE:
156. Barnum was probably right when he said that there's a sucker born every minute.
157. Life is pretty dull unless one deliberately stirs up some excitement.
158. Most people would be better off if they controlled their emotions.

MOST TRUE:
159. Sensitivity to the feelings of others is worth more than poise in social situations.
160. The ideal society is one where everybody knows his place and accepts it.
161. Itis safest to assume that all people have a vicious streak and it will come out when they are given a chance.

MOST FALSE:
162. Sensitivity to the feelings of others is worth more than poise in social situations.
163. The ideal society is one where everybody knows his place and accepts it.
164. It is safest to assume that all people have a vicious streak and it will come out when they are given a chance.

MOST TRUE:
165. People who talk about abstract problems usually don't know what they are talking about.
166. Anyone who completely trusts anyone else is asking for trouble.
167. It is essential for the functioning of a democracy that everyone vote.

MOST FALSE:
168. People who talk about abstract problems usually don't know what they are talking about.
169. Anyone who completely trusts anyone else is asking for trouble.
170. It is essential for the functioning of a democracy that everyone vote.

MOST TRUE:
171. It takes more imagination to be a successful criminal than a successful business man.
172. The phrase "the road to hell is paved with good intentions" contains a lot of truth.
173. Most men forget more easily the death of their father than the loss of their property.

MOST FALSE:
174. It takes more imagination to be a successful criminal than a successful business man.
175. The phrase "the road to hell is paved with good intentions" contains a lot of truth.
176. Most men forget more easily the death of their father than the loss of their property.

MOST TRUE:
177. Men are more concerned with the car they drive than with the clothes their wives wear.
178. It is very important that imagination and creativity in children be cultivated.
179. People suffering from incurable diseases should have the choice of being put painlessly to death.

MOST FALSE:
180. Men are more concerned with the car they drive than with the clothes their wives wear.
181. It is very important that imagination and creativity in children be cultivated.
182. People suffering from incurable diseases should have the choice of being put painlessly to death.

STRESS QUESTIONNAIRE

Administered to
Teaching Staff
Victoria Composite High School
November - December, 1973

(Sheet No. 3)

1. Sheet No. 3. Place the number 3 opposite the first question on the computer answer sheet.

2. Your four number code. Please use the same code that you used
3. previously.
4.
5.

6. Your order of birth in your family
   (1) First or only born
   (2) Born last—the baby in the family.
   (3) Middle child, or close to middle
   (4) The oldest of the opposite sex from the first born. (If you had an older brother(s), but you were the oldest girl in the family and vice versa)
   (5) Other or unknown.

7. How long since you have taken a University course?
   (1) Taking one this year.
   (2) During the 1972-73 year, spring session, or summer session
   (3) Within the last two-five years
   (4) Six to ten years.
   (5) More than ten years.

8. How long since you have taken training from an institution other than a University? (Include inservice, orientation, etc.)
   (1) Taking one this year.
   (2) During the last one and a half years, but not taking one at the moment.
   (3) Within the last two to five years
   (4) Six to ten years
   (5) More than ten years.

FOR THE PURPOSE OF THIS STUDY, "ADMINISTRATOR" REFERS TO CURRICULAR ASSOCIATES, ASSISTANT PRINCIPALS, PRINCIPALS, MEMBERS OF CENTRAL OFFICE, MEMBERS OF THE SCHOOL BOARD.

STRESS QUESTIONNAIRE, SHEET NO. 3 Page 2

INSTRUCTIONS FOR THIS PORTION OF THE QUESTIONNAIRE

The following statements describe various characteristics of jobs or organizational conditions that may or may not exist in the school. A knowledge of the accuracy (truth or falseness) of these statements might prove helpful in determining how conditions of work can be improved.

For each statement you are asked to give two ratings.

For each odd number, rate how true the statement is NOW.

DEFINITELY NOT TRUE	1 2 3 4 5	DEFINITELY TRUE

For each even statement, rate the desirability of the condition described.

It would be extremely UNDESIRABLE if this statement were true	1 2 3 4 5	It would be extremely DESIRABLE if the statement were true

---

TRUE: 9. There is some question about who is really running my department.

DESIRABLE: 10. There is some question about who is really running my department.

TRUE: 11. Assistant principals or principals are the only persons who can require that I reverse my priorities.

DESIRABLE: 12. Assistant principals or principals are the only persons who can require that I reverse my priorities.

TRUE: 13. Administration takes action on recommendations made from teachers.

DESIRABLE: 14. Administration takes action on recommendations made from teachers.

TRUE: 15. If a project, activity, or task is going badly it would be better to keep it quiet.

DESIRABLE: 16. If a project, activity, or task is going badly it would be better to keep it quiet.

TRUE: 17. Assistance is available in keeping things running smoothly.

DESIRABLE: 18. Assistance is available in keeping things running smoothly.

TRUE: 19. Administration requires a great deal of detailed information from teachers.

DESIRABLE: 20. Administration requires a great deal of detailed information from teachers.

TRUE: 21. Administration is quick to criticize for poor performance and seldom forgets a mistake.
DESIRABLE: 22. Administration is quick to criticize for poor performance and seldom forgets a mistake.

TRUE: 23. Important details have usually not been considered when planning activities.
DESIRABLE: 24. Important details have usually not been considered when planning activities.

TRUE: 25. Someone in addition to my immediate supervisor gives me direct orders.
DESIRABLE: 26. Someone in addition to my immediate supervisor gives me direct orders.

TRUE: 27. The channels of communication are hardly ever bypassed when assignments are made.
DESIRABLE: 28. The channels of communication are hardly ever bypassed when assignments are made.

TRUE: 29. When suggestions are made to the administrative staff, they receive fair evaluation.
DESIRABLE: 30. When suggestions are made to the administrative staff, they receive fair evaluation.

TRUE: 31. There are times when I am expected to make work appear more complicated than it really is.
DESIRABLE: 32. There are times when I am expected to make work appear more complicated than it really is.

TRUE: 33. When we have problems, my department gets support and assistance from other departments.
DESIRABLE: 34. When we have problems, my department gets support and assistance from other departments.

TRUE: 35. I am required to report detailed student attendance information.
DESIRABLE: 36. I am required to report detailed student attendance information.

TRUE: 37. Administration 'puts off' making important decisions.
DESIRABLE: 38. Administration 'puts off' making important decisions.

TRUE: 39. Those above me would rather sit tight than take a chance on being wrong.
DESIRABLE: 40. Those above me would rather sit tight than take a chance on being wrong.

STRESS QUESTIONNAIRE, Sheet No. 3 Page 4

TRUE: 41. A great deal of perfection is required of me in my work.
DESIRABLE: 42. A great deal of perfection is required of me in my work.

TRUE: 43. Work time is lost through poor scheduling and planning.
DESIRABLE 44. Work time is lost through poor scheduling and planning.

TRUE: 45. The channels of communication are clear to everyone.
DESIRABLE: 46. The channels of communication are clear to everyone.

TRUE: 47. Good ideas get serious consideration from administration.
DESIRABLE: 48. Good ideas get serious consideration from administration.

TRUE: 49. Administration is interested in ideas and suggestions from teachers.
DESIRABLE: 50. Administration is interested in ideas and suggestions from teachers.

TRUE: 51. I feel free to make recommendations to administration to change existing practices.
DESIRABLE: 52. I feel free to make recommendations to administration to change existing practices.

TRUE: 53. Information is withheld from me or my work group, even though it could be made readily available.
DESIRABLE: 54. Information is withheld from me or my work group, even though it could be made readily available.

TRUE: 55. My department receives a good deal of cooperation from other departments.
DESIRABLE: 56. My department receives a good deal of cooperation from other departments.

TRUE: 57. I am required to report detailed information concerning my teaching, administrative decisions, etc.
DESIRABLE: 58. I am required to report detailed information concerning my teaching, administrative decisions, etc.

TRUE: 59. Decisions are made with a minimum of delay.
DESIRABLE: 60. Decisions are made with a minimum of delay.

TRUE: 61. If I make one serious mistake my opportunities for future promotion would be seriously jeopardized.
DESIRABLE: 62. If I make one serious mistake my opportunities for future promotion would be seriously jeopardised.

TRUE: 63. Important factors are frequently overlooked when plans, scheduling, etc. are made.
DESIRABLE: 64. Important factors are frequently overlooked when plans, scheduling, etc. are made.

TRUE: 65. Assignments (registration, supervision, etc.) are made on an impartial basis.
DESIRABLE: 66. Assignments (registration, supervision, etc.) are made on an impartial basis.

TRUE: 67 All the necessary materials are on hand when needed.
DESIRABLE: 68. All the necessary materials are on hand when needed.

TRUE: 69. I receive assignments from outside the chain of command.
DESIRABLE: 70. I receive assignments from outside the chain of command.

TRUE: 71. Good ideas do not get communicated upward because the administrative staff is not very approachable.
DESIRABLE: 72. Good ideas do not get communicated upward because the administrative staff is not very approachable.

TRUE: 73. Information is dealt with secretively.
DESIRABLE: 74. Information is dealt with secretively.

TRUE: 75. In order to get a job done it is necessary to make it appear more urgent or important than it really is.
DESIRABLE: 76. In order to get a job done it is necessary to make it appear more urgent or important than it really is.

TRUE: 77. The person in charge of my department, work group, etc. always wants 'things' done in his way.
DESIRABLE: 78. The person in charge of my department, work group, etc. always wants 'things' done in his way.

TRUE: 79. Interrelated jobs and work activities (field trips, movies, etc.) are set up so that the activity causes little disruption.
DESIRABLE: 80. Interrelated jobs and work activities (field trips, movies, etc.) are set up so that the activity causes little disruption.

TRUE: 81. I have to keep aware of details because I am expected to answer detailed questions.
DESIRABLE: 82. I have to keep aware of details because I am expected to answer detailed questions.

TRUE: 83. It is difficult to get problems resolved because those in authority do not respond to or make prompt decisions on recommendations.
DESIRABLE: 84. It is difficult to get problems resolved because those in authority do not respond to or make prompt decisions on recommendations.

TRUE: 85. Mistakes are considered as learning experiences and seldom endanger one's long-term career with EPSB.
DESIRABLE: 86. Mistakes are considered as learning experiences and seldom endanger one's long-term career with EPSB.

TRUE: 87. I am free to experiment with teaching methods, marking alternatives, discipline techniques, etc.
DESIRABLE: 88. I am free to experiment with teaching methods, marking alternatives, discipline techniques, etc.

TRUE: 89. Teachers in my work group agree on our objectives.
DESIRABLE: 90. Teachers in my work group agree on our objectives.

TRUE: 91. Activities are planned before they are started.
DESIRABLE: 92. Activities are planned before they are started.

TRUE: 93. Administrators bypass levels below them in assigning work.
DESIRABLE: 94. Administrators bypass levels below them in assigning work.

TRUE: 95. Objectives are clearly communicated and understood.
DESIRABLE: 96. Objectives are clearly communicated and understood.

TRUE: 97. I am expected to provide detailed information on the spur of the moment.
DESIRABLE: 98. I am expected to provide detailed information on the spur of the moment.

TRUE: 99. After a recommendation upward has been made, I might as well stop worrying about it because it is likely to be a long time before a decision is made on it.
DESIRABLE: 100. After a recommendation upward has been made, I might as well stop worrying about it because it is likely to be a long time before a decision is made on it.

TRUE: 101. Teaching in Alberta is a prestigious profession.
DESIRABLE: 102. Teaching in Alberta is a prestigious profession.

TRUE: 103. I receive more remuneration from teaching than I could hope to receive from other work I could do.
DESIRABLE: 104. I receive more remuneration from teaching than I could hope to receive from other work I could do.

TRUE: 105. Students generally come to school to learn.
DESIRABLE: 106. Students generally come to school to learn.

TRUE: 107. The curricular associate in my area is an excellent resource person. When I discuss my teaching problems with him/her, I receive the needed assistance.
DESIRABLE: 108. The curricular associate in my area is an excellent resource person. When I discuss my teaching problems with him/her, I receive the needed assistance.

TRUE: 109. The assistant principal in charge of my area is an excellent resource person. When I discuss my teaching problems with him/her, I receive the needed assistance.

DESIRABLE: 110. The assistant principal in charge of my area is an excellent resource person. When I discuss my teaching problems with him/her, I receive the needed assistance.

TRUE: 111. I am reasonably certain that I will be teaching at this school next year, unless I desire to leave or ask to be transferred.

DESIRABLE: 112. I am reasonably certain that I will be teaching at this school next year, unless I desire to leave or ask to be transferred.

TRUE: 113. I have as much information about the selection criteria for administrative positions as I need.

DESIRABLE 114. Ihave as much information about the selection criteria for administrative positions as I need.

TRUE: 115. During the past few years too many administrative promotions have gone to women.

DESIRABLE 116. During the past few years too many administrative promotions have gone to women.

TRUE 117. Support staff services and clerical assistance are adequate at VCHS.

DESIRABLE: 118. Support staff services and clerical assistance are adequate at VCHS.

THANK YOU FOR YOUR ASSISTANCE. PLEASE FEEL FREE TO SUPPLEMENT THIS QUESTIONNAIRE WITH WRITTEN COMMENTS OR TO PHONE ME.

If you wish to know the names of the tests and your particular score on each, together with standardized scores for teachers, leave your no. and I will get a computer print-out to give this information. This should be available about the middle of January.

AGAIN MY SINCEREST THANKS.

APPENDIX C

PEARSON PRODUCT-MOMENT CORRELATIONS AMONG FIVE ROTATED STRESS FACTORS

Based on Responses of Teachers at VCHS

December, 1973

Factor	1	2	3	4	5
1	1.000				
2	0.179	1.000			
3	0.005	0.226	1.000		
4	-0.081	-0.016	0.059	1.000	
5	0.241	-0.021	-0.144	0.046	1.000

APPENDIX D

HERMANS' QUESTIONNAIRE MEASURE OF ACHIEVEMENT MOTIVATION*

Aspect	
P	At high school I thought perseverance was: very important rather important important very important
TT	To begin with homework was: a very great effort a great effort a rather great effort not much effort very little effort
AL	When I was still in high school the standards I set myself with regard to my studies were: very high average low very low.
TT	If I was called from my homework to watch television or listen to the radio, then afterward: I always went straight back to work. I would only take a short pause and then go back to work I would always wait a little before starting I would find it very difficult to begin again
AL	Work that requires great responsibility I would like to do very much I would only do if I was paid well I don't think I would be capable of doing it Is completely unattractive to me.
AB	I would find a life in which one wouldn't have to work at all: ideal very pleasant pleasant unpleasant very unpleasant.
UM	When I was in high school I thought that to attain a high position in society was: unimportant of little importance not so important rather important very important.
P	When I begin something I: never carry it to a successful conclusion seldom carry it to a successful conclusion sometimes carry it to a successful conclusion usually carry it to a successful conclusion. always carry it to a successful conclusion.
PC	At school I found classmates who studied very hard: very nice nice just as nice as others who didn't work as hard not nice not nice at all.
UM	At school I admired persons who had reached a very high position in life: very much much little not at all.
P	I can work at something without getting tired for: a very long time a long time not too long a time only a short time only a very short time
PC	Good relations with my teachers at high school: were appreciated very much were appreciated were thought not to be so important were thought exaggerated in value were thought completely unimportant.
UM	Boys succeed their father as manager of the business because: they want to enlarge and extend the business they are lucky their father is manager they can put their new views into practice this is the easiest way to earn a lot of money
TT	When the teacher gave lessons at school I usually set my heart on doing my best and making a favorable impression I usually paid great attention to the things being said My thoughts often strayed to other things I was more interested in things that had nothing to do with school
	If I have not attained my goal and have not done a task well then: I continue to do my best to attain the goal I exert myself once again to attain the goal I find it difficult to not lose heart I'm inclined to give up I usually give up.

Aspect	
P	When doing something difficult: I give it up very quickly I give it up quickly I give it up rather quickly I don't give up too soon I usually see it through.
TS	In general I am: very strongly future-oriented strongly future-oriented not so strongly future-oriented not at all future-oriented.
TP	I very often am bored I often am bored I sometimes am bored I hardly ever am bored I never am bored.
AB	Shopping is something: I like very much I like I don't like I hate.
TP	For life's extra pleasures: I usually have no time I often have no time I sometimes have too little time I usually have enough time I always have time.
TP	I usually am: very busy busy not so busy not busy not busy at all
AB	Other people think I: work very hard work hard work pretty hard don't work very hard don't work hard
AB	At school they thought I was very diligent diligent not always so diligent rather easy-going very easy going
AB	Working is something I would rather not do I don't like doing very much I would rather do now and then I like doing I like doing very much.
TS	To prepare myself for a long time for an important task: really is senseless often is rather rash can often be useful testifies a sense of reality is necessary to succeed.
AL	When I am working, the demands I make upon myself are: very high high pretty high not so high low very low.
AL	I usually do: much more than I resolved to do a bit more than I resolved to do a little less than I resolved to do much less than I resolved to do.
RB	When I was in high school I was: extremely ambitious very ambitious not so ambitious a little ambitious hardly ambitious at all
TS	Organizing something: I like doing very much I like doing I don't like doing very much I don't like doing at all.

*Explanation of Aspect Code

AL Aspiration Level
RT Risk-taking Behaviour
UM Upward Mobility
P Persistence
TT Task Tension
TP Time Perception
TS Time Perspective
PC Partner Choice
RB Recognition Behavior
AB Achievement Behavior

APPENDIX E

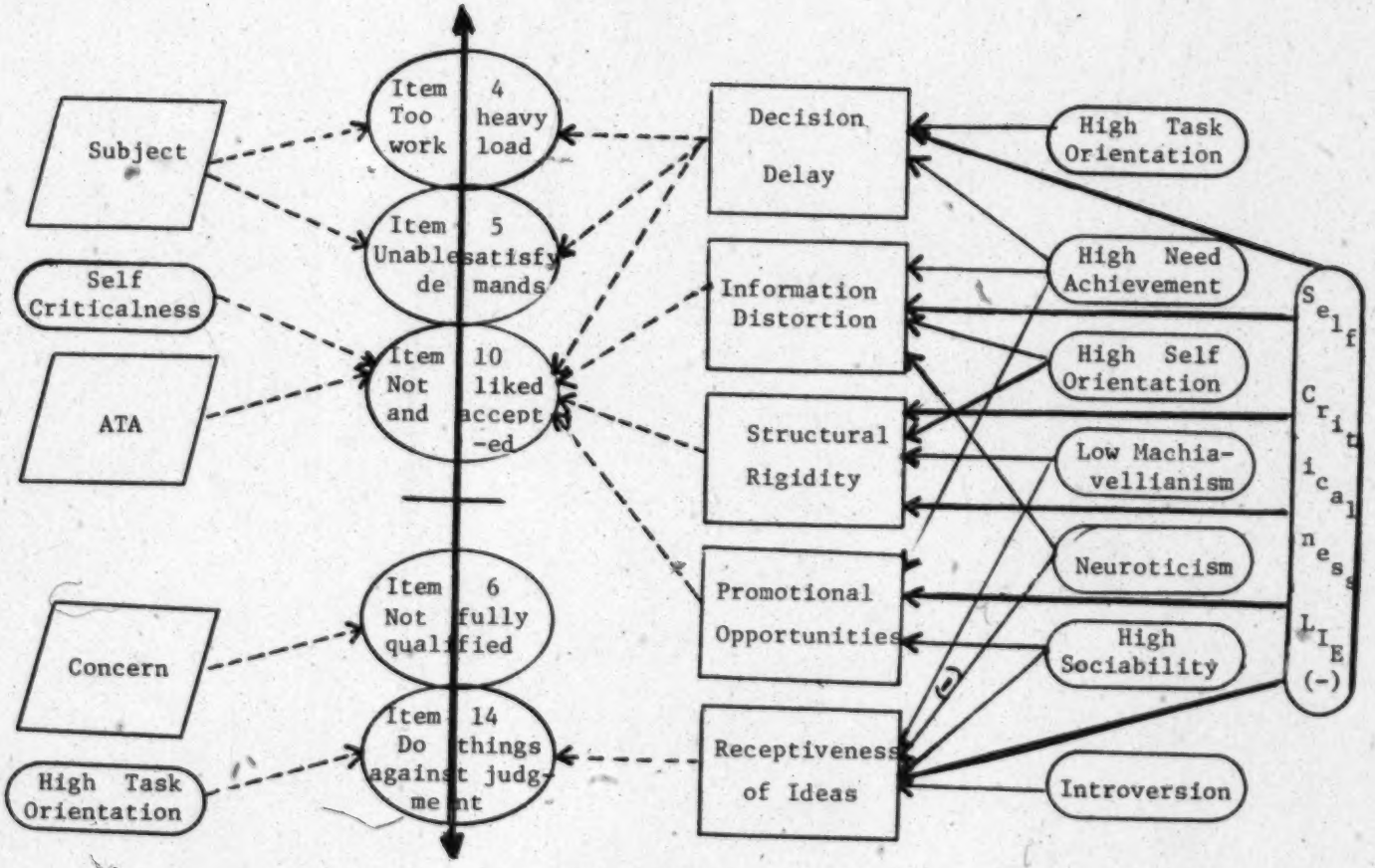


Figure 30

Variables Underlying Discriminant Function 1
Discriminating on Basis of Teaching Experience

APPENDIX F

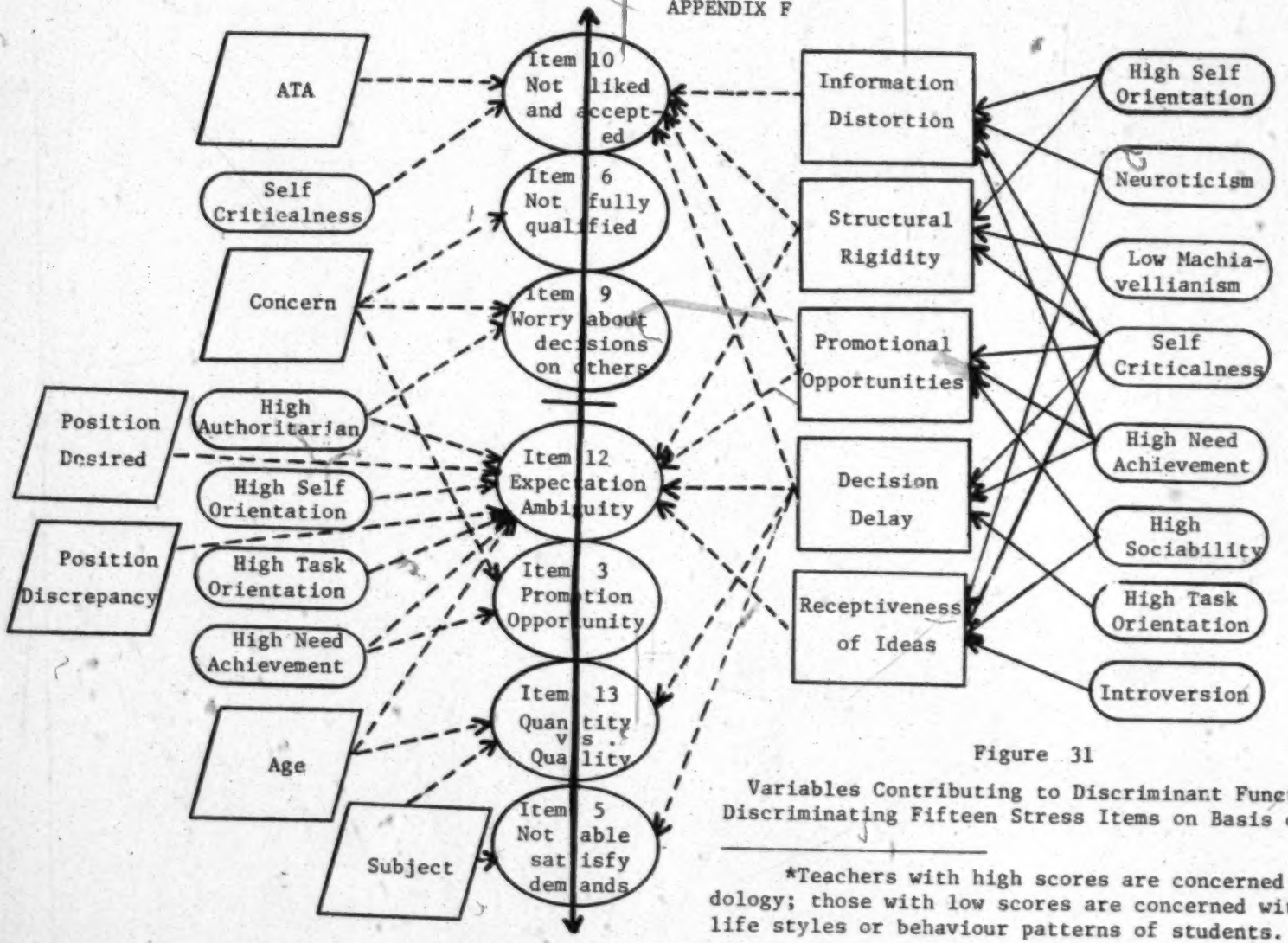


Figure 31

Variables Contributing to Discriminant Function 2* Discriminating Fifteen Stress Items on Basis of Concern

*Teachers with high scores are concerned with methodology; those with low scores are concerned with changing life styles or behaviour patterns of students.

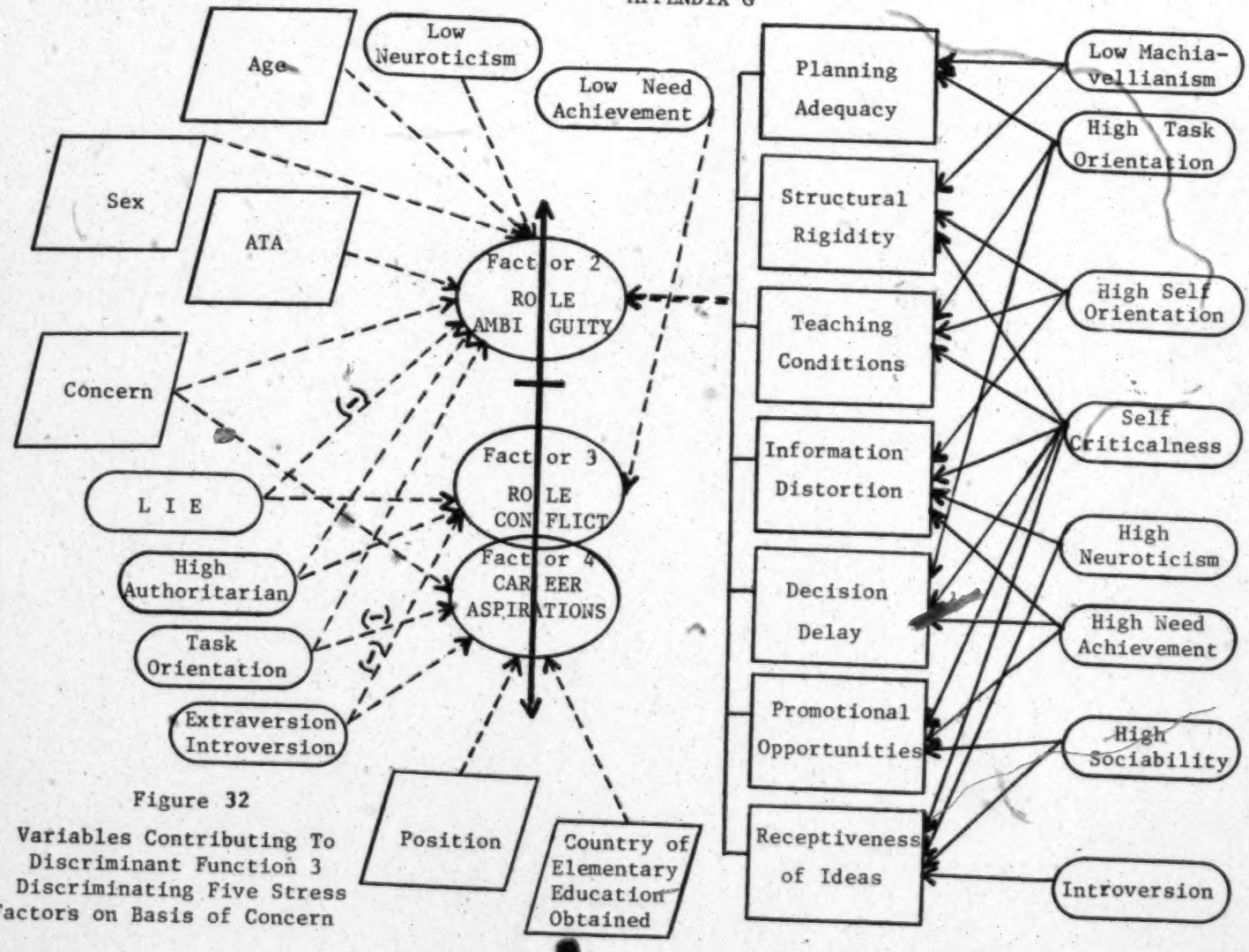


Figure 32

Variables Contributing To Discriminant Function 3 Discriminating Five Stress Factors on Basis of Concern

APPENDIX H

CANONICAL CORRELATIONS

FIFTEEN STRESS ITEMS AND PERSONALTIY*

Victoria Composite High School Teachers

December, 1973

Attribute	Personality Eigenvector		Stress Eigenvector
Need Achievement	-0.463	Stress Item 1	0.421
Authoritarianism	-0.085	2	0.147
Neuroticism	0.296	3	0.200
Extraversion	-0.152	4	-0.044
Lie	-0.377	5	-0.377
Machiavellianism	0.127	6	-0.114
Sociability	-0.232	7	-0.039
Task Orientation	-0.430	8	0.047
Service Orientation	0.442	9	-0.171
Self Orientation	-0.275	10	0.109
		11	-0.070
		12	-0.051
		13	-0.527
		14	0.013
		15	0.640

* Probability of Occurrence = 0.067

APPENDIX I

CANONICAL CORRELATIONS

FIFTEEN STRESS ITEMS AND ORGANIZATIONAL STRUCTURE

Victoria Composite High School Teachers

December, 1973

	Organizational Structure Eigenvector 1	Organizational Structure Eigenvector 2
Horizontal Coordination	-0.090	0.021
Information Distortion	0.632	-0.030
Upward Information Requirements	-0.048	0.539
Receptiveness of Ideas	0.222	-0.189
Teaching Conditions	0.270	0.399
Rigidity of Structure	0.399	-0.456
Adequacy of Planning	0.331	-0.247
Delay in Decision Making	0.064	0.455
Promotional Opportunities	-0.053	-0.006
Chain of Command	-0.438	-0.195
	Stress Eigenvector 1	**Stress Eigenvector 2**
	-0.115	-0.129
Item	0.102	-0.034
Item	0.017	-0.270
Item 4	-0.066	0.060
Item 5	-0.040	0.240
Item 6	-0.210	-0.314
Item 7	0.232	0.435
Item 8	0.212	0.037
Item 9	-0.115	0.351
Item 10	0.113	0.145
Item 11	0.393	-0.411
Item 12	0.009	-0.212
Item 13	-0.103	0.301
Item 14	0.023	-0.292
Item 15	0.797	-0.158
Probability	0.005	0.104

APPENDIX J

COMPARISON OF MEANS AND STANDARD DEVIATIONS

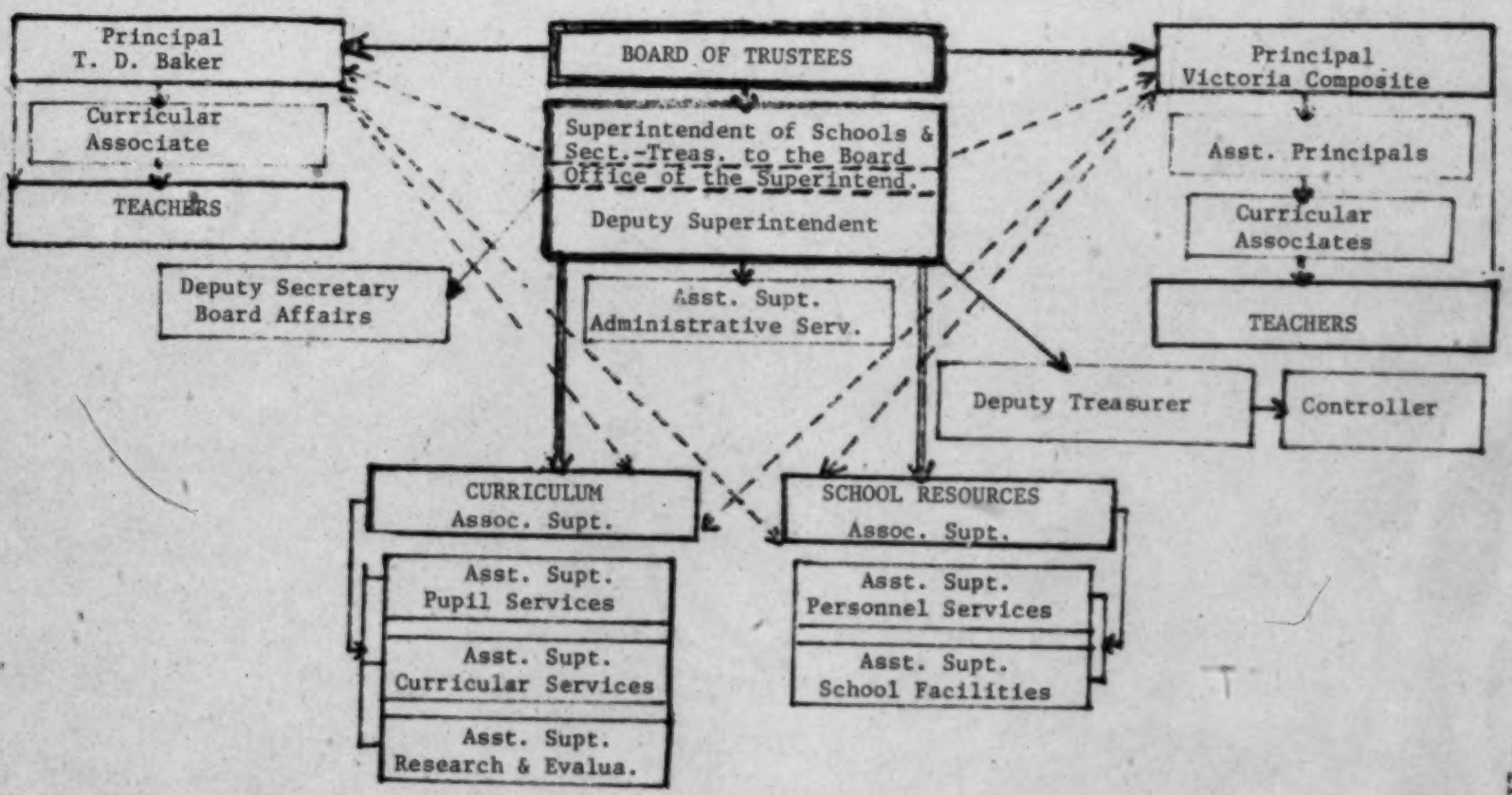
Victoria Composite High School Teachers and

Rogers' and Jobson's Banff School

Senior Management Group (1974)

Item	VCHS Mean	VCHS S.D.	Management Mean	Management S.D.	T-test
1	2.68	0.84	2.38	0.72	2.36
2	2.34	0.84	2.17	0.74	1.32
3	2.42	1.28	2.12	0.98	1.62
4	3.09	1.18	2.87	1.00	1.24
5	2.71	0.98	2.45	0.83	1.76
6	1.84	0.82	2.13	0.78	-2.23
7	2.58	1.09	2.45	0.85	0.83
8	2.42	0.87	2.34	0.76	0.60
9	2.89	0.83	2.75	0.85	1.03
10	2.15	0.74	2.25	0.66	-0.88
11	2.50	0.99	2.34	0.80	1.09
12	2.21	0.81	2.30	0.75	-0.71
13	2.91	1.07	2.80	0.96	0.67
14	2.45	0.89	2.17	0.71	2.14
15	2.37	1.09	2.59	1.01	-1.29

EDMONTON PUBLIC SCHOOL BOARD



APPENDIX K

ADMINISTRATIVE ORGANIZATION